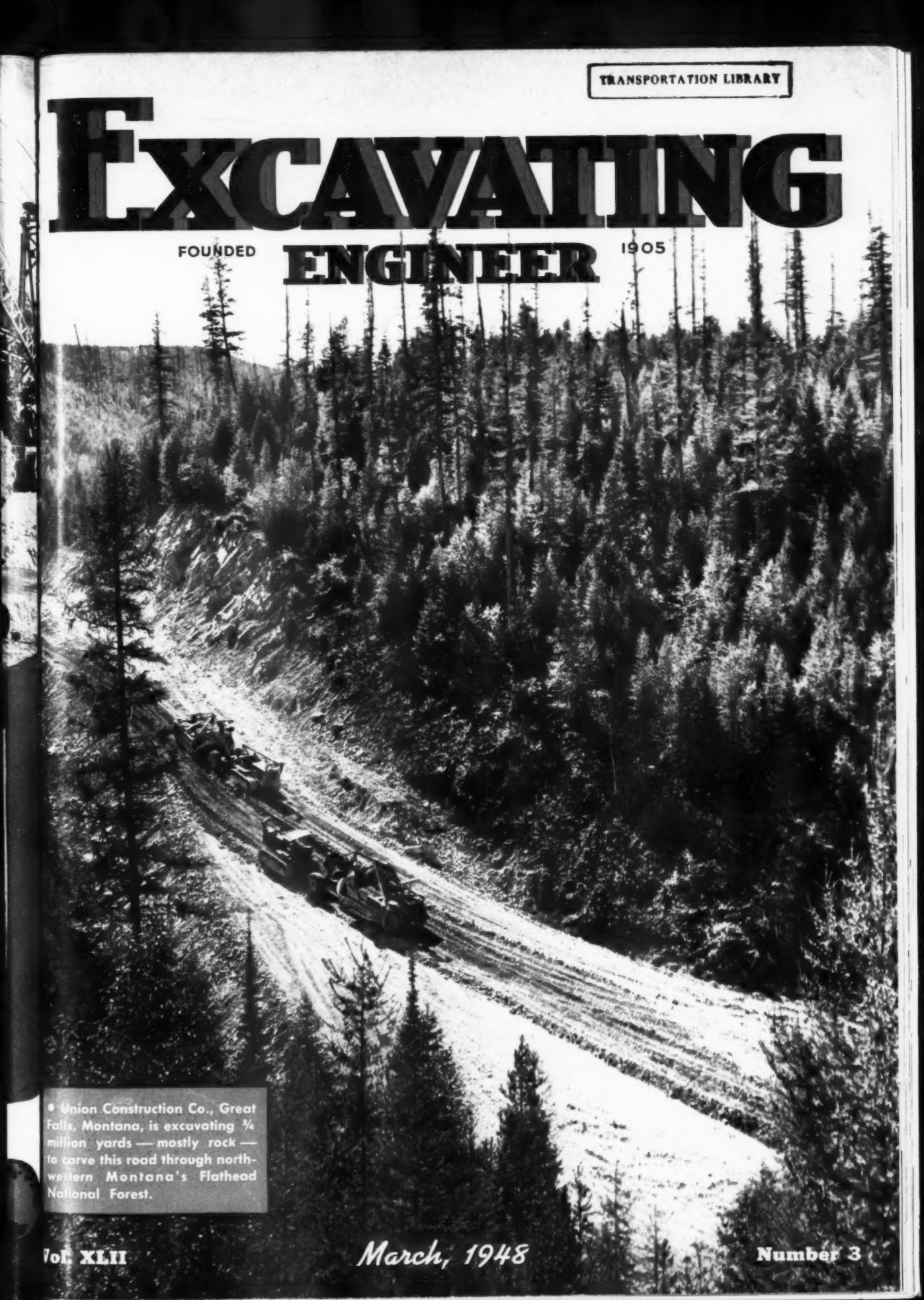
TRANSPORTATION LIBRARY

EXCAVATING ENGINEER

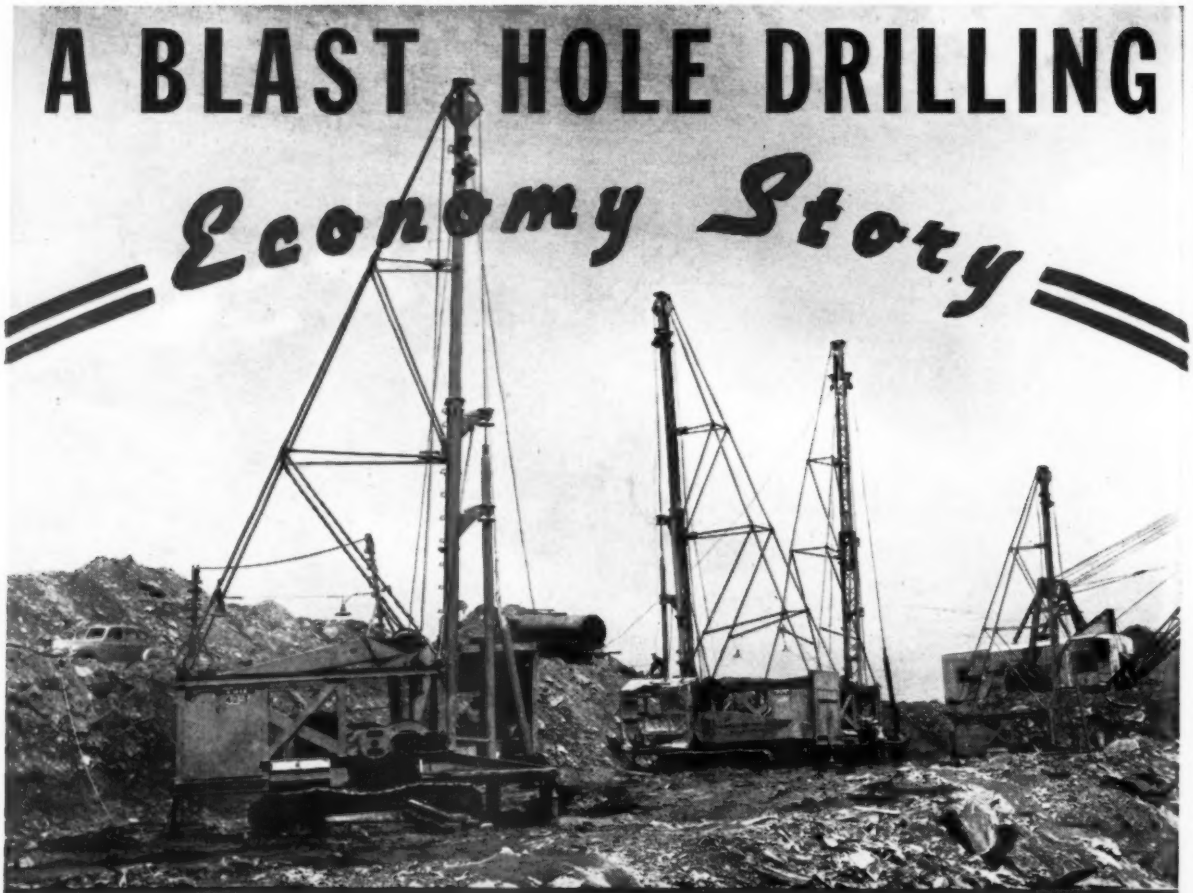
FOUNDED 1905



• Union Construction Co., Great Falls, Montana, is excavating ¾ million yards — mostly rock — to carve this road through northwestern Montana's Flathead National Forest.

Vol. XLII March, 1948 Number 3

A BLAST HOLE DRILLING *Economy Story*



Here are some of the important reasons why Bucyrus-Erie blast hole drills can help you realize greater savings on your drilling operations

● **GREATER FOOTAGE** — Bucyrus-Eries combine accurately-timed shock-absorbed drilling with appropriate tool weights to produce drilling blows that mean high-speed penetration. Quick pick-up of the tools adds to drilling effectiveness, permits maximum number of blows per minute.

● **FEWER HOLES** — Because Bucyrus-Eries permit drilling larger holes (6" to 12") than can be drilled with tripod or wagon drills, you can prepare the same volume of material with far fewer holes.

● **LOWER OPERATING COSTS** — Power units (gasoline, diesel, or electric, depending upon your requirements and the size of machine) provide ample power to handle the tool string. Efficient application of power keeps fuel consumption low.

● **MORE DRILLING TIME** — Full length caterpillar mountings permit speedy moves between locations; permanently attached stabilizing jacks make set-ups easy and fast; built-in power tool wrenches (available on all except the 22-T) speed tool changes.

● **LESS MAINTENANCE ATTENTION** — Frame and derrick strength, obtained through all-steel electric-welded construction, resists the stresses of long continuous use. The derrick-head shock absorber and the rubber-insulated heel and spudding beam sheaves protect the machine from harmful shock. 9845C

It will pay you to investigate these models

22-T for 5⅝" to 6⅝" holes
27-T for 6" to 6⅝" holes
29-T for 9" holes
42-T for 9" to 12" holes

SO. MILWAUKEE **BUCYRUS ERIE** WISCONSIN

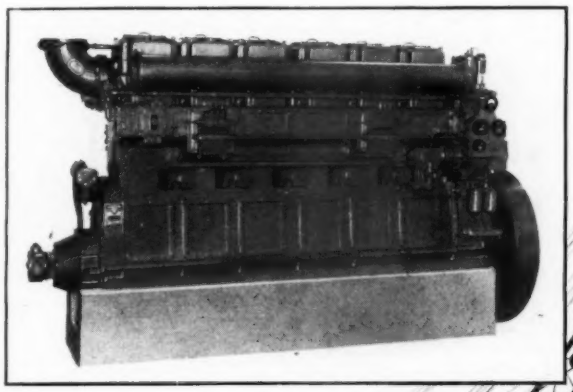
TRANSPORTATION LIBRARY

Only a RUGGED Diesel can stand the gaff!

Powering a big, hard-working dragline is said to offer an engine punishment more brutal than in any other kind of service. It means day after day of incessant no-load-to-full-load operation at nearly constant, governor-controlled speed.

Standard Cooper-Bessemer Diesels are one of the few engines extensively and successfully used for this rugged service. You might want to bear this fact in mind next time you need a highly efficient engine for dependable performance at its finest.

Whatever you need in Diesel power, for stationary, marine, locomotive or other mobile service, from 100 to 1600 bhp, there's a reliable Cooper-Bessemer designed for your requirements. Our nearest office will be glad to give you helpful cooperation . . . always.



This big Bucyrus-Erie, walking dragline with 180 ft. boom and 5 cu. yd. bucket, is completely powered by a single Cooper-Bessemer Diesel.

The **Cooper-Bessemer** *Corporation*

MOUNT VERNON, OHIO — GROVE CITY, PENNA.

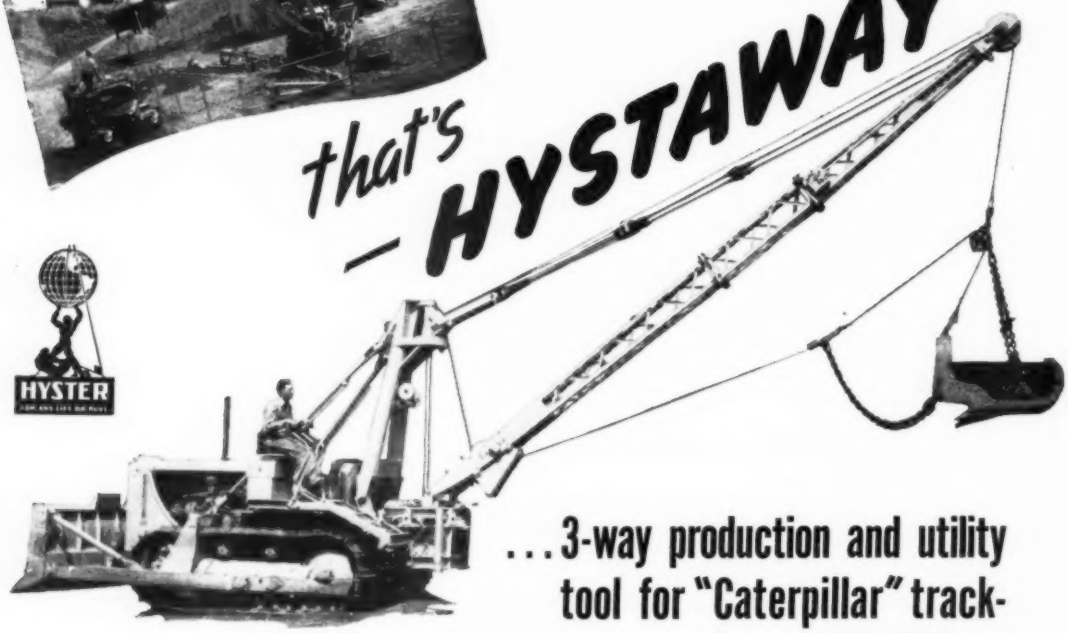
New York City Washington, D. C. Bradford, Pa.
Parkersburg, W. Va. San Francisco, Calif. Houston, Dallas, Greggton, Pampa and Odessa, Texas
Seattle, Wash. Tulsa, Okla. Shreveport, La. St. Louis, Mo. Los Angeles, Calif.
Caracas, Venezuela Gloucester, Mass. Calmes Engineering Company, New Orleans, La.

DRAGLINE

CLAMSHELL

CRANE

that's — HYSTAWAY



. . . 3-way production and utility tool for "Caterpillar" track-type tractor and bulldozer

Take all of the good work features of a dragline, clamshell and crane—combine them in one unit—and you have the Hystaway. **PUT HYSTAWAY ON A "CATERPILLAR" D8, D7 OR D6 WITH BULLDOZER and you have a money-making machine.**

Hystaway is both a production and utility tool. On a new or old "Caterpillar" D8, D7 or D6, it can be mounted by 2 men in 2 hours and taken off in 1 hour (after initial installation).

Hystaway plus "Caterpillar" track-type mobility is setting performance records for ½-yard machines that make important news to construction men: increased production; lower job costs; faster work schedules . . . **Your "Caterpillar" distributor can arrange a Hystaway demonstration and provide *current delivery*.** See him soon. Write for detailed literature.

HYSTER COMPANY

2976 N. E. CLACKAMAS ST., PORTLAND 8, OREGON
1876 NORTH ADAMS STREET, PEORIA 1, ILLINOIS

EXCAVATING ENGINEER

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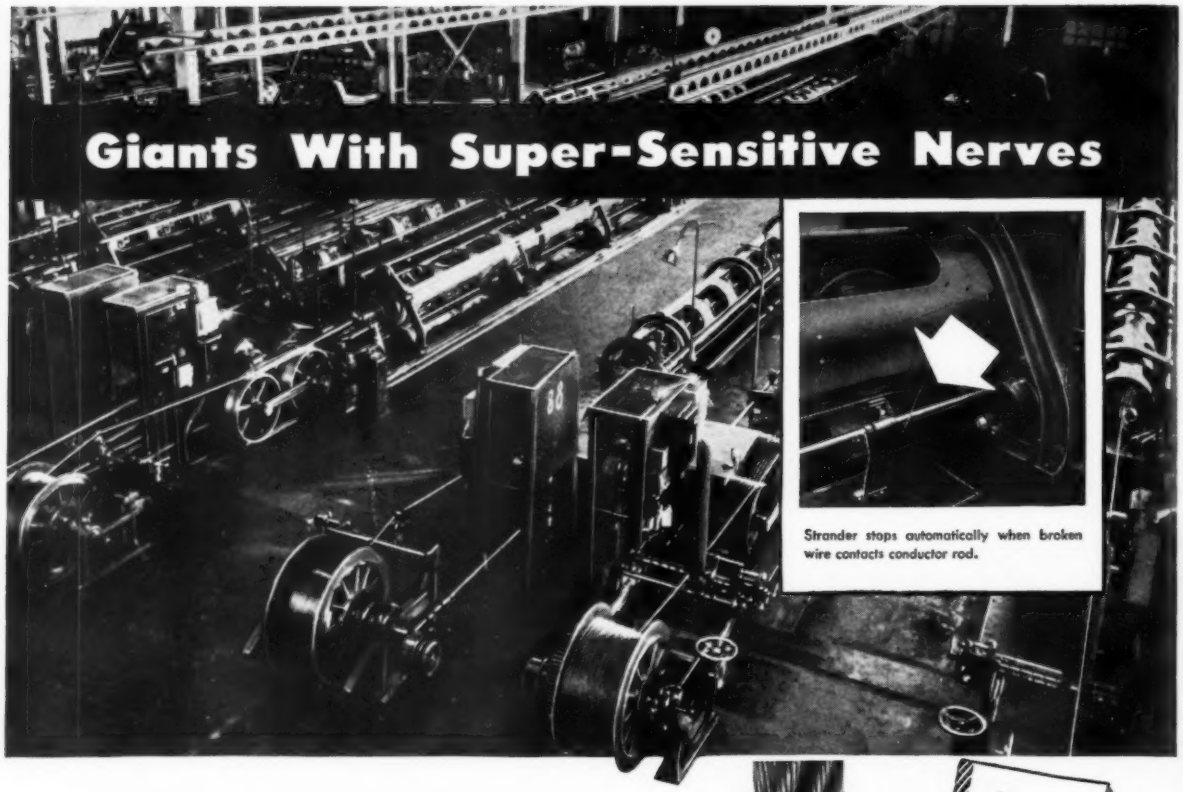
Giants With Super-Sensitive Nerves



Strander stops automatically when broken wire contacts conductor rod.

Wickwire's modern rope machines (some of which twist as many as 46 wires into strand in a single operation) operate at tremendous speed. Yet, if a single wire breaks or if the wire in a spool runs out, the entire machine comes to a dead stop in less than six seconds.

When the sensitive automatic electric controls and air brakes have brought the strander to a stop, the wire ends are micro-welded by a skilled operator, who subsequently anneals the weld to restore its original toughness and ductility. Such thoroughness is your assurance of the uniformity and perfect construction, necessary if a rope is to deliver the utmost in performance, safety and long life.

Wickwire Distributors and Rope Engineers in key cities everywhere are ready to help solve your wire rope problems and to supply the type of rope that best meets your requirements. Wickwire Rope is available for prompt delivery from strategically located warehouse stocks and is supplied in all sizes and constructions, both regular lay and WISSCOLAY *Pre*formed.

HOW TO REDUCE ROPE COSTS AND PROLONG ROPE LIFE

Thousands of wire rope users have found that the information packed in the pages of "Know Your Ropes" has made their work easier. It's full of suggestions on proper selection, application and usage of wire rope. It's easy-to-read and profusely illustrated. For your free copy, write—Wire Rope Sales Office, Wickwire Spencer Steel, Palmer, Mass.

WICKWIRE ROPE

CF&I & SUBSIDIARIES

A PRODUCT OF THE WICKWIRE SPENCER STEEL DIVISION OF THE COLORADO FUEL AND IRON CORPORATION

WIRE ROPE SALES OFFICE AND PLANT—Palmer, Mass. **EXECUTIVE OFFICE**—500 Fifth Avenue, New York 18, N. Y.

SALES OFFICES—Abilene (Tex.) • Boston • Buffalo • Chattanooga • Chicago • Denver • Detroit • Emlenton (Pa.) • Fort Worth • Houston • New York • Philadelphia • Tulsa

PACIFIC COAST SUBSIDIARY—The California Wire Cloth Corporation, Oakland 6, California

NORTHWEST

Simplicity of Design

Here is the deck view of a Northwest. Note the simplicity of design. There are only two main horizontal shafts and all assemblies are readily accessible.

Gears too, are few in number. Compare this with the complications of other machines. Simplicity means lower cost operation and maintenance.

Keeps costs down and profits up!

Design complications mean higher upkeep costs. Northwest simplicity assures easy maintenance. Look at the deck of a Northwest. Simple, isn't it? Only two main shafts, few gears, a direct line of power without complications. Everything *get-at-able,* easy to adjust, easy to maintain.

This is just one of the many Northwest advantages that make the Northwest a real Rock Shovel—another of the features that assures you the type of service you would like to have.

Ask Northwest Owners! There are *good* reasons why every third Northwest sold is a repeat order! Check on Northwest advantages and plan to follow the Northwest Crowd.

NORTHWEST ENGINEERING COMPANY
1506 Field Building, 135 South LaSalle St., Chicago 3, Illinois

Follow the NORTHWEST CROWD

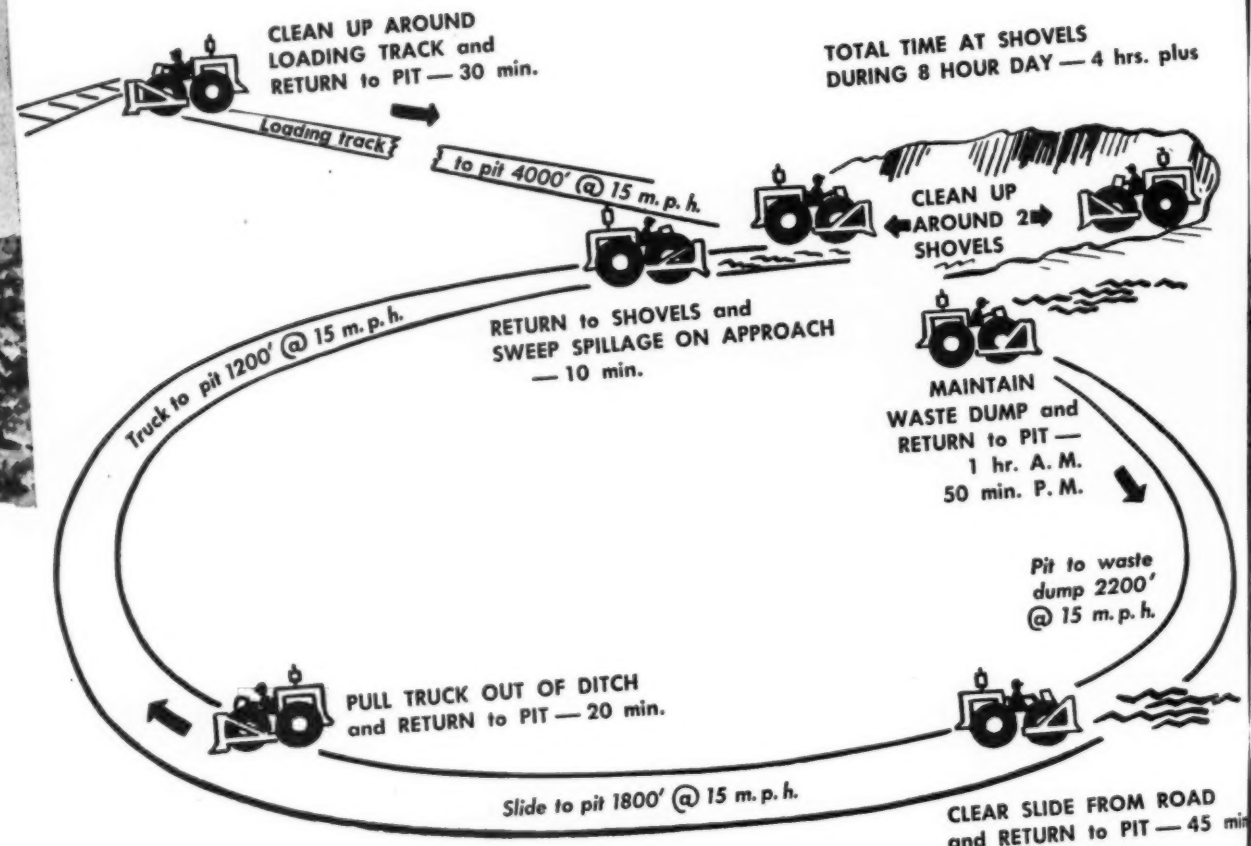
Still the Standard toward which others build!

If you have a REAL ROCK SHOVEL *you won't have to worry about output in dirt*

NORTHWEST

SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

7 jobs in 8 hours


CLEAN UP AROUND LOADING TRACK and RETURN to PIT — 30 min.
Loading track
to pit 4000' @ 15 m. p. h.
TOTAL TIME AT SHOVELS DURING 8 HOUR DAY — 4 hrs. plus
CLEAN UP AROUND 2 SHOVELS
RETURN to SHOVELS and SWEEP SPILLAGE ON APPROACH — 10 min.
Truck to pit 1200' @ 15 m. p. h.
MAINTAIN WASTE DUMP and RETURN to PIT — 1 hr. A. M. 50 min. P. M.
Pit to waste dump 2200' @ 15 m. p. h.
PULL TRUCK OUT OF DITCH and RETURN to PIT — 20 min.
Slide to pit 1800' @ 15 m. p. h.
CLEAR SLIDE FROM ROAD and RETURN to PIT — 45 min

A TYPICAL EXAMPLE

Find out what Tournadozer speed and mobility can do for You

LeTOURNEAU LET EQUIPMENT

See your Le Tourneau Distributor NOW for complete information

swith 1 TOURNADOZER

WHEN you see the new high-speed Tournadozer at work, be prepared for an entirely new conception of dozer service. It means new things for your pit — in more ways than one!

Travel speeds to 15 m.p.h.

Here is a dozer that can really ***"run"*** . . . 15 m.p.h. That's a mile in 4 minutes . . . twice as fast as slow-moving crawlers!

This means any job on your location is only a few minutes away for your Tournadozer. One unit can easily clean up for two or more shovels . . . level your dump . . . clean up around loading track . . . open drainage ditch . . . clear up blasted or washed-in material on your pit floor. And in most pits . . . do ***all*** of these jobs ***in a single day.***

30% faster working speeds

Tournadozer not only gets places faster . . . it's also up to 30% faster with a load than ordinary tractor-dozers. 180 h.p., with 4-wheel drive on giant low-pressure tires, put plenty of power and traction behind that big blade. Constant mesh transmission gives instantaneous speed selection ***without stopping to shift gears.***

15 m.p.h. REVERSE!

Same four speeds in reverse as in forward drive, means your Tournadozer can back up for each pass at speeds up to 15 m.p.h. On ordinary dozing cycles this means cutting the return half of your digging cycle by ***about two-thirds.***

You need at least one of these fast rubber-tired Tournadozers for all-around utility work ***right now.*** Call your LeTourneau Distributor today for the information you need.

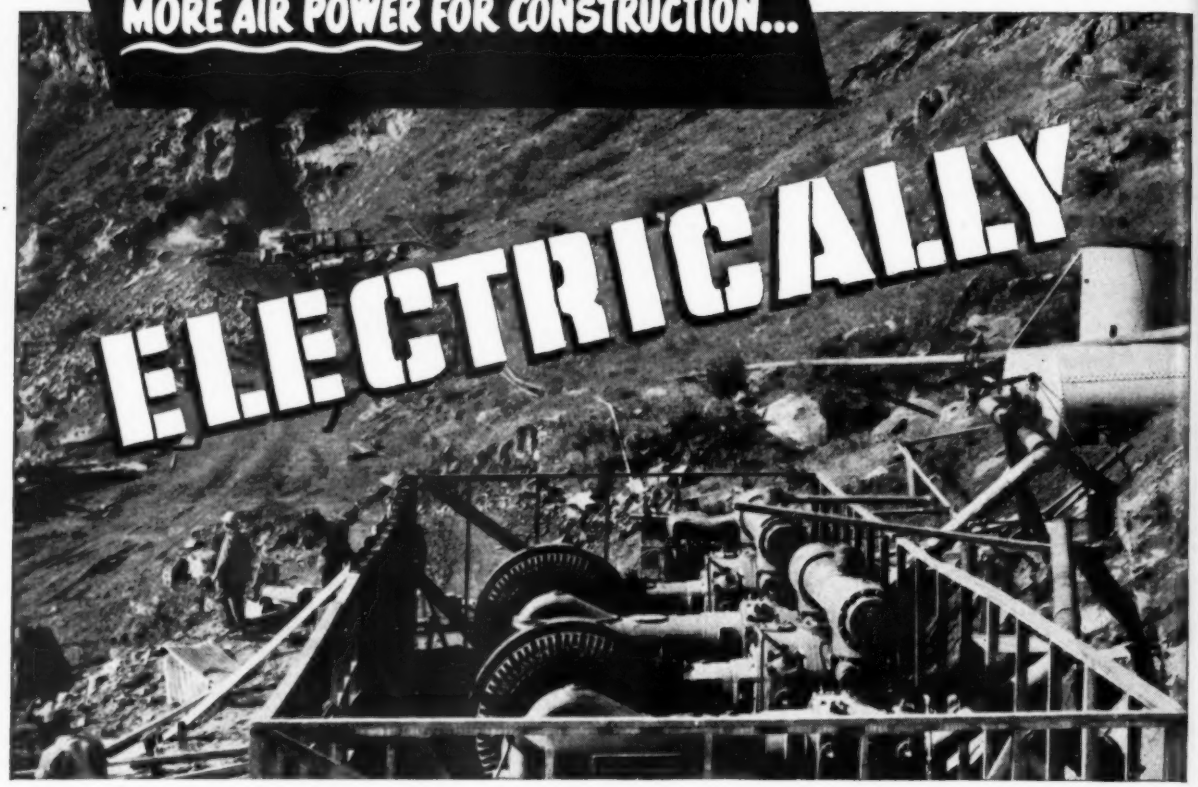
Tournadozer — Trademark M14

LETOURNEAU
PEORIA, ILLINOIS

HIGH-SPEED RUBBER-TIRED

TOURNADOZERS

MORE AIR POWER FOR CONSTRUCTION...



Compressor With Electric Drive: A High-Efficiency Tool For Progressive Contractors

Compressed air . . . electricity; each has its own field of application in construction operations. And when combined they form an unbeatable team for supplying continuous compressed air at the lowest possible operating cost. The electric drive requires little maintenance, yet affords maximum reliability. If the compressor power requirement is 75 horsepower or more, synchronous motors can be applied which give the additional advantage of power-factor improvement on the line, thereby making possible further savings in operating costs.

ELECTRIFIED CONSTRUCTION
BETTER PRODUCT
LOWER COST

The electrically driven compressor is just one of many electrified construction tools which are helping contractors build more for less . . . faster. Whether you buy or build contractors' equipment, ask your General Electric representative to show you the inherent advantages of electric drive. *Apparatus Dept., General Electric Co., Schenectady, N. Y.*

GENERAL ELECTRIC
655-65

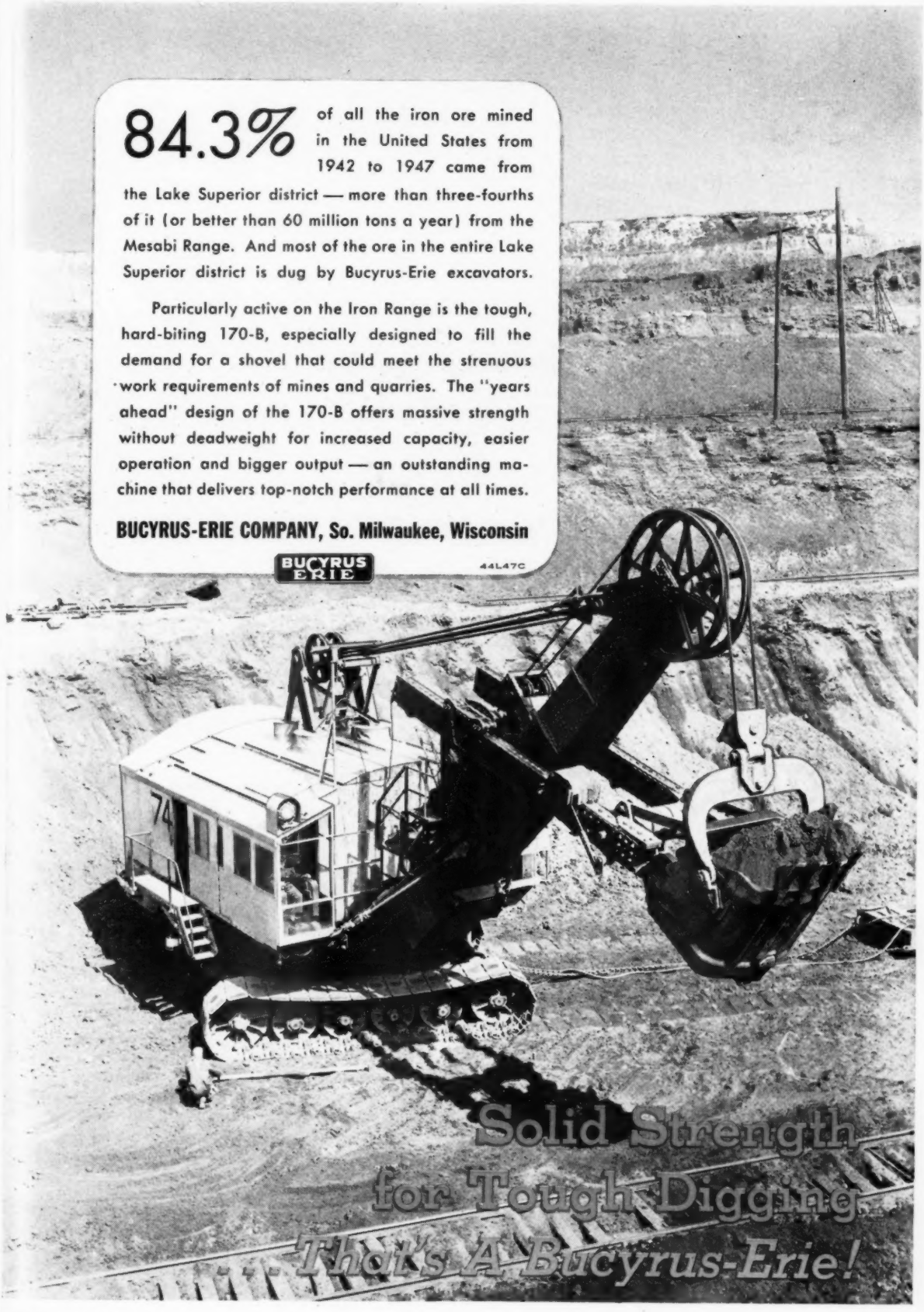
84.3% of all the iron ore mined in the United States from 1942 to 1947 came from the Lake Superior district — more than three-fourths of it (or better than 60 million tons a year) from the Mesabi Range. And most of the ore in the entire Lake Superior district is dug by Bucyrus-Erie excavators.

Particularly active on the Iron Range is the tough, hard-biting 170-B, especially designed to fill the demand for a shovel that could meet the strenuous work requirements of mines and quarries. The "years ahead" design of the 170-B offers massive strength without deadweight for increased capacity, easier operation and bigger output — an outstanding machine that delivers top-notch performance at all times.

BUCYRUS-ERIE COMPANY, So. Milwaukee, Wisconsin

BUCYRUS ERIE

44L47C



Solid Strength
for Tough Digging
That's A Bucyrus-Erie!

PLAN to Come to THE GREATEST SHOW ON EARTH for the CONSTRUCTION INDUSTRY

BETTER ROADS FOR A BETTER WORLD

45th Annual Convention and Road Show

SOLDIER FIELD CHICAGO

JULY 16-24, 1948

AMERICAN ROAD BUILDERS' ASSOCIATION

OVER 30 FOOTBALL FIELDS OF EQUIPMENT

- The Most Important highway and construction event in 1948!
- For the First Time heavy machinery exhibited and OPERATED out-of-doors!
- Brand New ideas in equipment!
- Completely new types of equipment for greater job profits!
- Discussions on pertinent Highway and Construction problems by international authorities!

If you are going to keep up with changing conditions, changing methods, changing costs and new and projected equipment, you can't afford to miss the International Road Show and Convention. Remember this is the *first Road Show since the war*—your first opportunity to see new and improved equipment first-hand. Plan to set aside July 16 to 24 for bringing yourself up-to-date on what is going on in the construction industry.

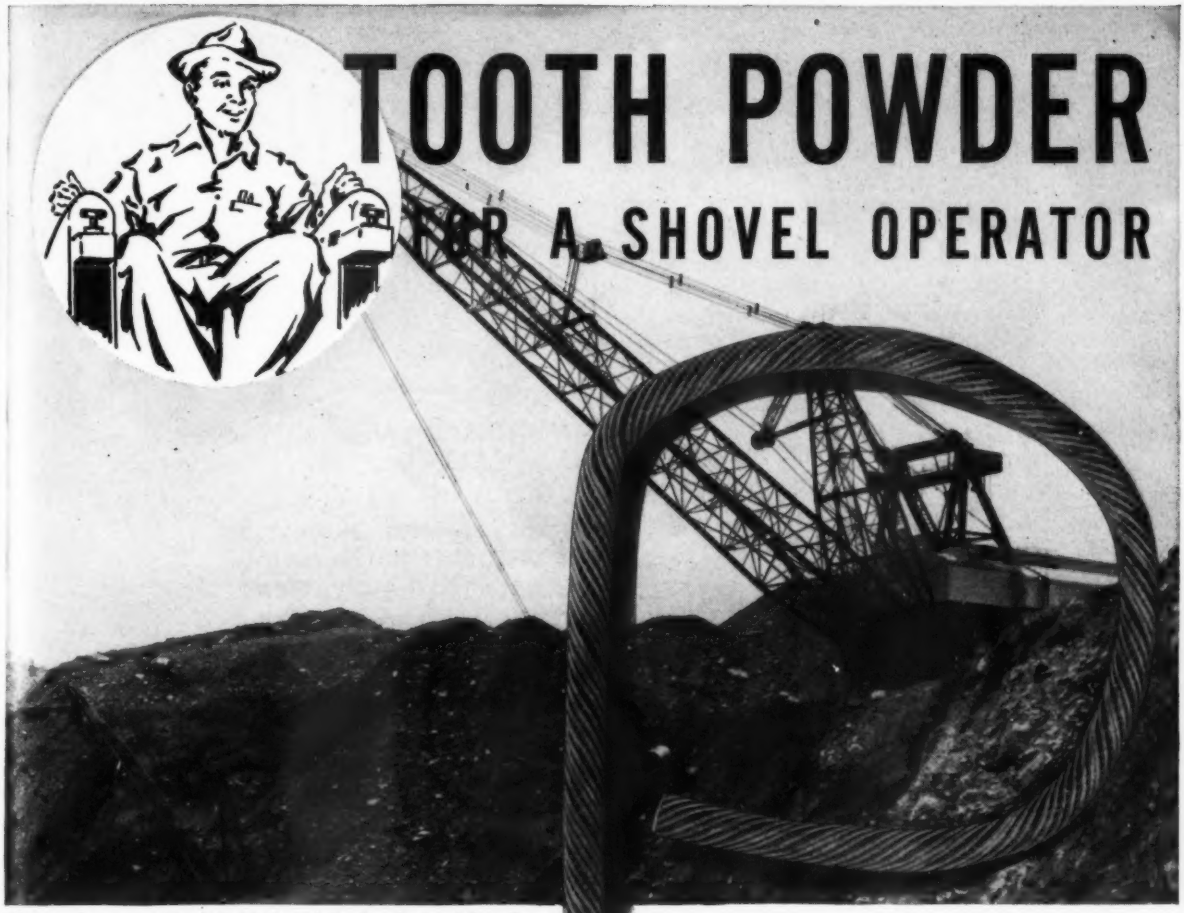
Here is a nine-day opportunity to compare all types of construction equipment, meet old friends, make new contacts and hear international authorities discuss the latest methods on the construction and maintenance of streets, roads and airports. Don't wait—Make your reservations NOW.

45th ANNUAL CONVENTION AN INTERNATIONAL ROAD SHO

SOLDIER FIELD • JULY 16-24, 194

AMERICAN ROAD BUILDERS ASSOCIATION

International Building, Washington 4, D. C., U. S. A.



TOOTH POWDER FOR A SHOVEL OPERATOR

Photograph courtesy The Philadelphia and Reading Coal and Iron Co.

FROM SHOTS FIRED WITH RIMACORD

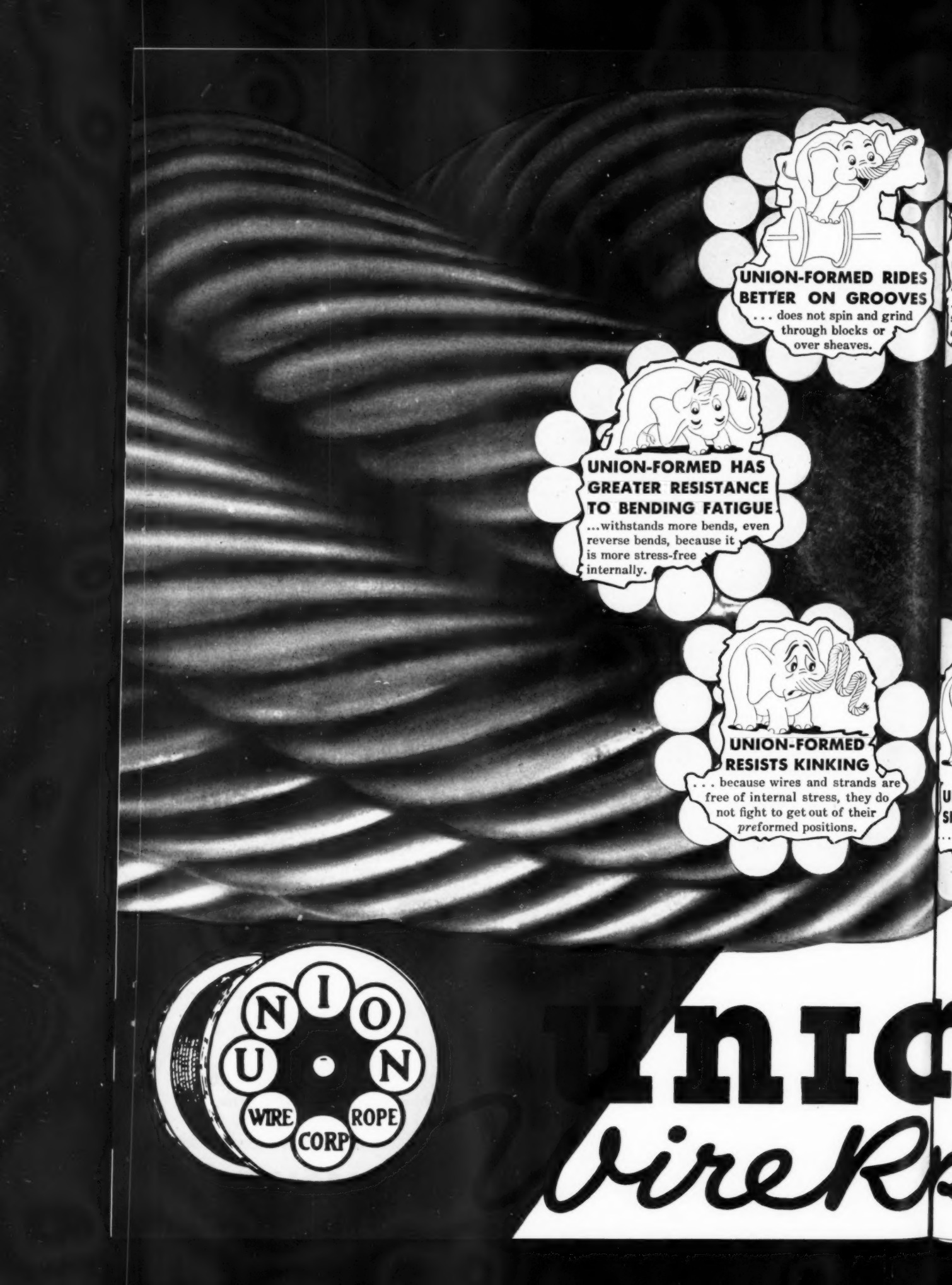
Every time a shot is fired with Primacord, fragmentation reaches a point where drag-line or shovel teeth get easy digging . . . operators can load more trucks per hour . . . yardage goes *up* — costs stay *down*.

You get this efficiency because Primacord — and only Primacord — is itself a detonating agent. In every hole, Primacord is in direct contact with the individual cartridges and detonates them with full power. In every hook-up you can plan so that front holes shoot a split-second before succeeding holes. This combination of *full power* and *relief of burden* boosts fragmentation to give your operators *faster going.*

Primacord makes the grade in any kind of blasting operation. Its flexible covering makes for ease of handling during all kinds of weather. It hooks up as fast as you can tie simple square knots and half hitches. And because Primacord is insensitive to stray currents, it's the logical detonator to put to work alongside of high voltage electrical equipment.

Primacord comes to you on easy-to-handle spools, in grades to meet every blasting condition. Ask your supplier about it — or write us direct.

THE ENSIGN-BICKFORD CO., SIMSBURY, CONN.
Also* Ensign-Bickford *Safety* Fuse • *Since 1836


UNION-FORMED RIDES BETTER ON GROOVES
. . . does not spin and grind through blocks or over sheaves.
UNION-FORMED HAS GREATER RESISTANCE TO BENDING FATIGUE
...withstands more bends, even reverse bends, because it is more stress-free internally.
UNION-FORMED RESISTS KINKING
. . . because wires and strands are free of internal stress, they do not fight to get out of their preformed positions.
UNION
WIRE ROPE CORP
Union
Wire Ro

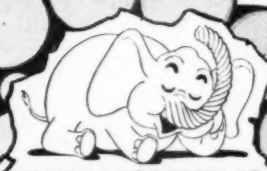
ion-formed

(Preformed)

STRONGER LASTS LONGER

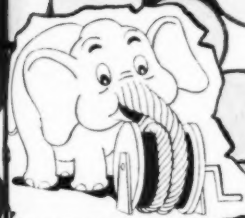
UNION-FORMED IS SAFER TO HANDLE

. . . worn, broken wires do not spring out and porcupine but continue to lie close to the rope.



UNION-FORMED IS FLEXIBLE and RELAXED

...bends in any direction, yet has "toughness" to withstand jerking and other punishing strain.



UNION-FORMED SPOOLS BETTER

.. even with a light load it winds evenly and tightly.

Few products have so many extra advantages to offer as Union-Formed (*Pre*formed) Wire Rope. Look at them! Safer to handle... flexible and relaxed... greater resistance to bending fatigue... resists kinking... spools better... rides better on grooves. You save time and labor costs in quicker installation, splicing, and socketing... in reduction of accidents. Each of these advantages has actual dollar and cents value to the user—each fills a need for greater economy, safety, finer performance in the field.

Key to the exceptional quality and durability of Union-Formed Wire Rope is its *pre*formed construction. Before the wire rope is constructed, each strand is precision shaped to lay in the exact position which it will take in the completed wire rope. Thus, torsion and internal stresses which fatigue strands, cause them to break quickly and spring out are completely eliminated by *pre*forming.

To assure you of getting the Union-Formed Wire Rope best suited to your job, the pedigree of each reel of wire rope is recorded. A quick check tells which rope has the tensile strength, torsional values, fatigue life, ductility, hardness of wire, etc., to give you the longest, most satisfactory service.

Union-Formed Wire Rope is made by specialists who devote their whole time to the making of fine quality wire rope. It is supplied to you by distributors who share this "know-how" and who are fully equipped with a thorough working knowledge of wire rope applications.

See your nearest Union Wire Rope distributor. Tell him you want "Union-Formed". He will help you analyze your operating conditions and recommend the wire rope constructions to meet the exact specifications for your job.

Your Union Wire Rope
DISTRIBUTOR IS LISTED IN YELLOW SECTION OF YOUR TELEPHONE DIRECTORY

UNION WIRE ROPE CORPORATION

2142 MANCHESTER AVE. **KANSAS CITY 3, MO.**

- Send book, bulletin, or circular as checked.

- ☐ Steel Tendons
- ☐ Rope Dope No. 1
- ☐ Splicing Wire Rope
- ☐ Socketing Wire Rope
- ☐ Wire Rope Lubrication
- ☐ Mining Rope Circular
- ☐ Choker Rope Circular
- ☐ Slusher Rope Circular
- ☐ Correct Handling of Wire Rope

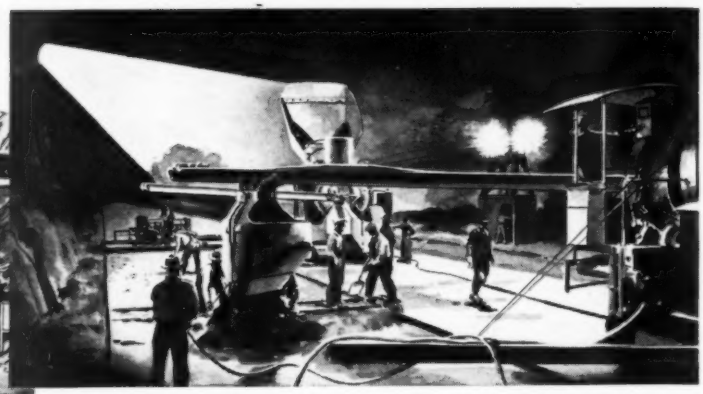
FIRM NAME .....

ADDRESS .....

CITY .....

ZONE ..... STATE .....

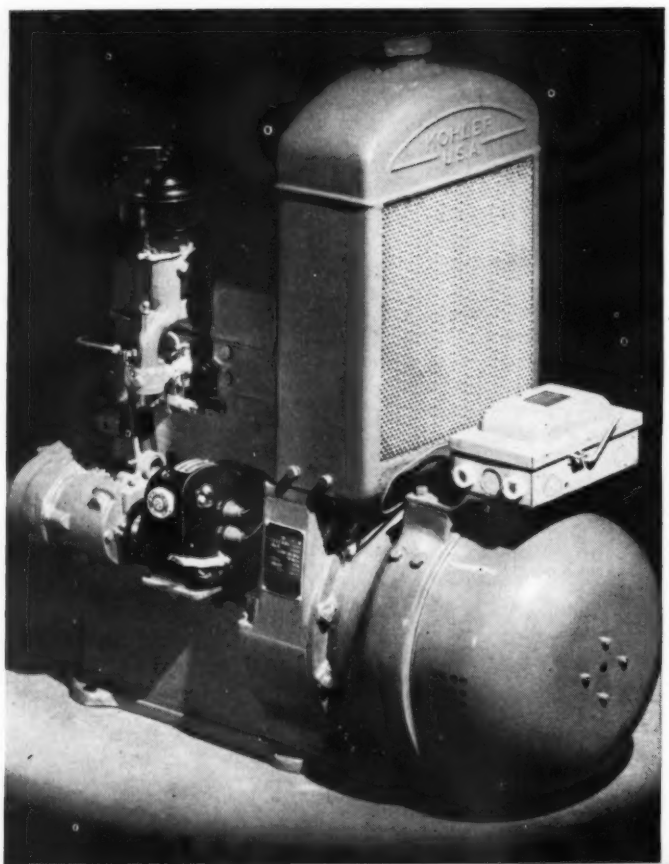
Right: Pennsylvania Turnpike under construction.



Left: In the toll houses of the completed Pennsylvania Turnpike Kohler Electric Plants are installed for stand-by lighting service in case normal power supply fails. Stand-by Kohler Plants also provide important protection for homes, hospitals, farms, schools and other places.

Major American construction jobs use

KOHLER ELECTRIC PLANTS



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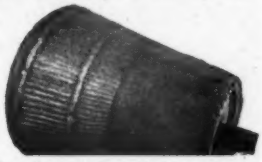

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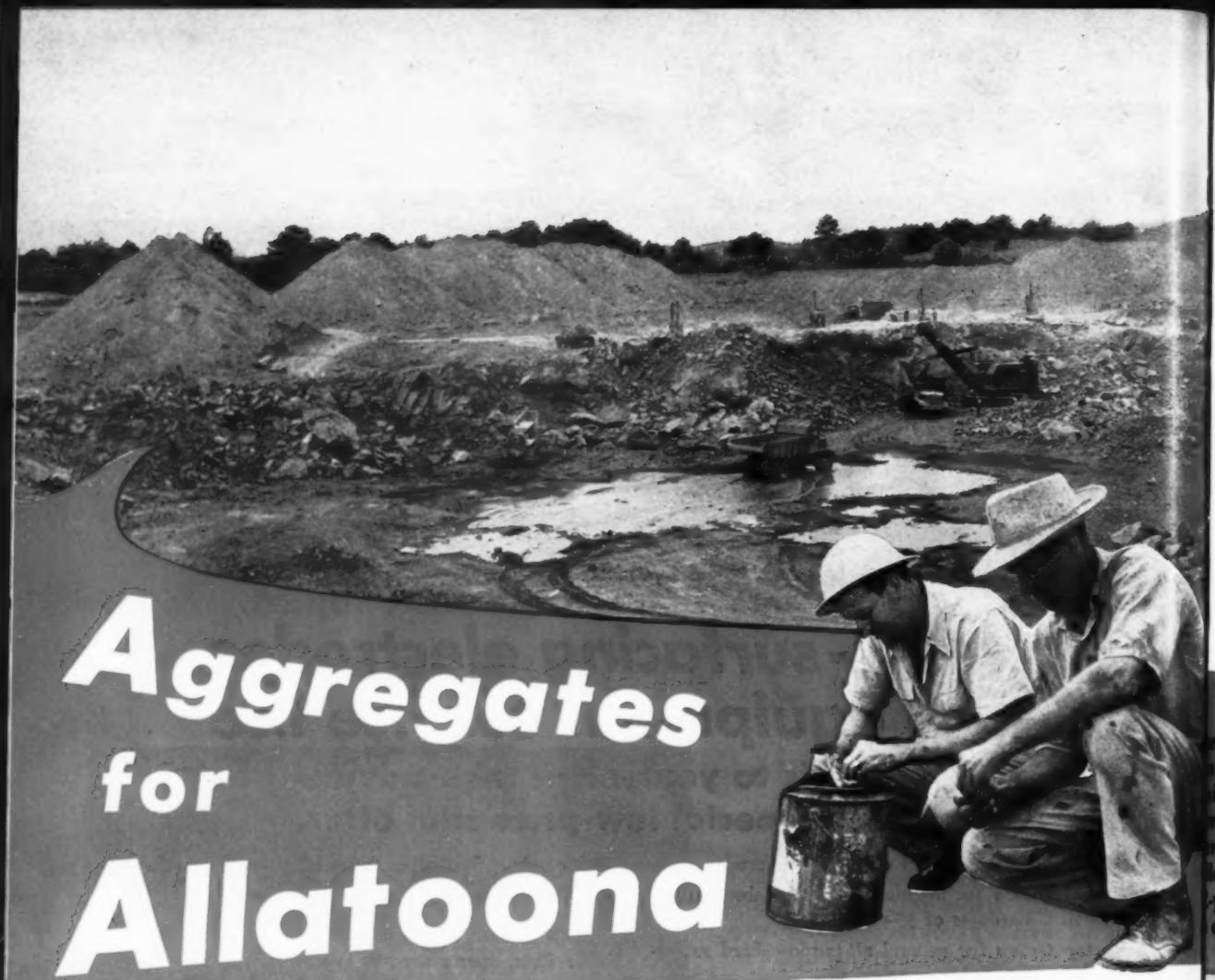


Aggregates for Allatoona

• Superintendent J. B. Lambert (left) and Ralph Jenkins, drill foreman, discuss a minor repair problem.

By Albert E. Becker

TO REACH the quarry of Lambert Brothers, Inc., and Kershaw Mining Co., I drove ten miles north of Cartersville on U. S. 411 to White, then along the main route of the L & N railroad three miles past fields of maturing cotton which spread all over the slightly rolling countryside. I soon learned from Mr. J. B. Harding, Lamberts' purchasing agent, and R. E. Burgess, general manager for the Kershaw Mining Co. that Lambert Brothers had supplied aggregates for the U. S. Engineers' Dale Hollow Dam (near Celina, Tennessee) before the war.

In the present joint venture with the Kershaw Mining Company of Birmingham, Alabama, Lambert was awarded a new contract in January, 1947, to build a quarry and supply nearly 1,000,000 tons of aggregates for construction of the new Allatoona Dam. Supervised by the U. S. Engineers, the dam is being constructed on the Etowah River eight miles northeast of Cartersville in Bartow County, Georgia.

A Stroll with the Super

Presently a slender young man —clothes well rock-dusted, and wearing an aluminum safety helmet—walked into the office with a cheerful greeting. This was plant superintendent J. B. Lambert. "Suppose we get started by taking a little stroll around our job," he suggested. "It will give you a better idea of what we are doing here."

As we walked along a hauling road to the quarry Mr. Lambert explained that due to frequent heavy rainfall in the region it was found necessary to surround the quarry excavation with a 60-ft. embankment composed of overburden stripped from the quarry excavation. This serves as a dike to keep surface water out. To assist in dewatering projects, the contractor has on hand three pumps: 1½, 3 and 4-in. Jaegers. Two were in use at the time, pumping water from sumps over the dike—from the top of which we had an excellent view of the 400 x 900-ft. quarry below us.

Removed Five Feet of Burden

"Before we started here, this place was nothing but a pasture," Mr. Lambert remarked. Then he spoke of methods used to open the quarry. The job started last winter with the removal of five feet of red clay overburden. This

• General view of the quarry shows the dike to keep out surface water, and a Bucyrus-Erie 2-yd. shovel loading to 12-yd. Euclid dumps. Above the 20-ft. face, five Ingersoll-Rand FM-2 wagon drills are putting down 1½-in. holes.

was done with a LeTourneau 8-yd. scraper powered by a D-8 Caterpillar, and a Lima 1201 dragline using a 90-ft. boom and a 3½-yd. Page bucket.

As the rock appeared, it was found to contain long deep folds or crevices, varying from 2 to 6-ft. wide and 3 to 8-ft. deep. To speed up operations, as well as to free the rock entirely of overburden, Lambert's ⅜-yd. Bucyrus-Erie 10-B dragshovel was brought in. What small amounts of material remained in these folds was quickly removed by hand.

Approximately three weeks after operations started, drilling of the rock began on a 20 percent grade to a depth of 20 feet. The quarry is excavated in 20-ft. lifts. Ingersoll-Rand FM-2 wagon drills, JB-4 Jackhammers powered by a class PRE-2, 1575-cu. ft. compressor do the drilling. "Those FM-2's have been averaging from 8 to 10 feet per hour," reported Mr. Lambert.

Gives Blasting Procedure

"Right from the start we've used Atlas powder with Rockmaster caps," said Mr. Lambert. Then he described the blasting procedure. "All shooting occurs in the evenings. We use 5 x 6-ft. spacing, 1½-in. holes 20-ft. deep, with 6 feet of burden for face blasting. We figure that it takes about one pound of powder to bring down three tons of rock. Our first 20-ft. lift is approximately completed."

The deep blue color of the limestone attracted my attention, since it didn't resemble the more common type one usually sees. Geologically, it is called Dolomite limestone and has a near-granite texture. Since last May, more than 200,000 cu. yds. of this stone have been quarried and processed into aggregates and fines.

A Bucyrus-Erie 2-yd. shovel was loading 10-yd. rear-dump Euclids. I learned that the 2-yd. rig was averaging better than 340 yds. of rock per hour. To get a better look at this phase of the operation we walked down into the quarry and paused for a minute to watch a workman drilling an oversize rock with a JB-4 Ingersoll-Rand Jackhammer.

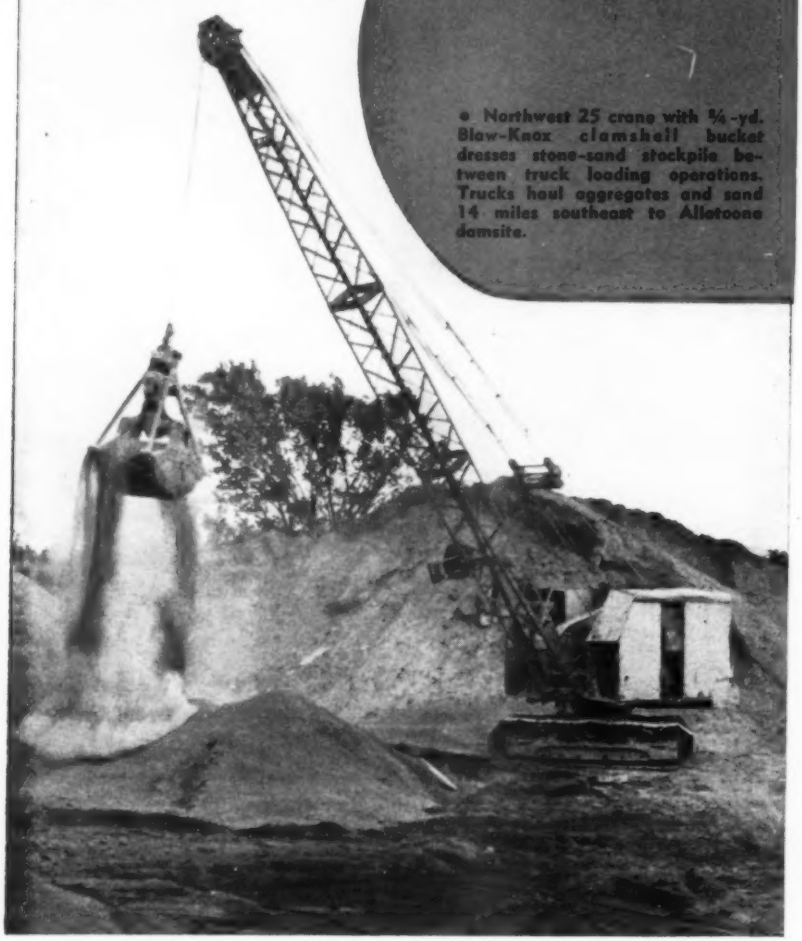
We Watch the Shovel

Beyond, in front of the quarry face, the shovel was swinging in perfect timing from one side to the other—like a conductor leading an orchestra. On one side it

bert Brothers, Inc., and Kershaw ing Company are producing nearly illion tons of aggregates for Allatoona , Cartersville, Georgia, in their quarry White, Georgia. Limestone is wagon-ed, loaded after shooting to 10-yd. dumps by -yd. shovel, processed, and hauled 14 miles to damsite at the rate of 2500 tons per 8-hr. day.

• 18-in. belt conveyors build up stock piles of aggregates in various sizes for hauling to the damsite in 10-ton Fruehauf trailers.

• While three Ingersoll-Rand FM-2 wagon drills beat out a "smoke screen" above, the 2-yd. shovel loads blasted rock to a 10-yd. Euclid. Keeping the pit dry is a 3-in. Jaeger pump (top left).



• Northwest 25 crane with ¾-yd. Blaw-Knox clamshell bucket dresses stone-sand stockpile between truck loading operations. Trucks haul aggregates and sand 14 miles southeast to Allatoona damsite.

gulped a big helping of rock, then swiftly swung to the other side and dropped its load into a waiting 10-yd. rear dump Euc'.

To the right and left were groups of men busy with Jackhammers building up side-curtains of white dust as they drilled oversize rocks for secondary blasting. Above and in front was a battery of six Ingersoll-Rand FM-2 wagon drills slugging a steady beat into the 20-ft. face.

The three rear-dump Euc's have such a short haul from the shovel to the crusher that two are usually waiting to be loaded. We hopped aboard the next one and rode up to the crusher.

There we stopped to watch two of the trucks unload stone to the hopper of a 30 x 42 Telsmith primary crusher. From this operation the 8-in. material is carried via belt to a surge pile, then bottom fed into a tunnel-type conveyor which carries it over a Tyrock washer and a series of Symons screens. After screening, the plus 8-in. is fed into a Telsmith secondary crusher and returned to the screens. Stone sand is produced from ¾-in. and surplus material passed through a 4-ft. short-head Telsmith crusher, a set of Austin-Western 30 x 33 roll crushers, and final screening.

14-Mile Haul to Dam

Lambert Brothers' processing plant prepares in regular quantities 6, 3, 1½ and ¾-inch aggregates in addition to stone sand, and all grades are placed in loading piles by conveyors as produced. The Shinall Trucking Company of Cartersville, Georgia, as sub-contractor hauls all products 14 miles from the processing plant to the dam with a fleet of 20 new Ford and White trucks mounting 8-ton Fruehauf trailers. The deliveries average 2,500 to 3,000 tons of material per 8-hr. day. The Shinall Trucking Company is operated by twin brothers, Rob and Roy Shinall who have been in the hauling business for years in the Cartersville region.

We passed the crushers and walked between two rows of prepared aggregates and stone sand in huge piles waiting to be loaded into trucks. At the far end of

this array, a Northwest 25 crane, using a ¾-yd. Blaw-Knox clamshell bucket, was busily loading stone-sand into a Fruehauf trailer.

Mr. Lambert is the kind of a boss most men like. He knows most of his men from way back, and I was impressed by the way he would occasionally stop to lend a hand with a repair job or help to move a heavy object—never hesitating because of grease or dirt. All the men wear safety helmets, but the boss is the only one who wears an aluminum one. Except for that one item, it would be hard to distinguish him from the others—the whole place reflects Lambert's winning personality in terms of efficiency and team-work.

The other principal members of his firm are his older brothers, W. E. Lambert, president, and John and Ray Lambert. The Kershaw Mining Company is operated by G. C. McCullough, president, at Birmingham, Alabama. Although there is no time limit on the present contract, the plant's production is at present running well ahead of schedule.

• Long folds and crevices were found in the rock surface after removal of the five feet of red clay overburden. These pockets were cleaned out with a ¾-yd. dragshovel and finished by hand.

• Workmen remove final waste material from surface pockets in center foreground. In right foreground, a workman drills an oversize rock with an Ingersoll-Rand JB-4 Jackhammer. Note 60-ft. dike surrounding the quarry.

Operation Orange Bowl

Rapid raising of pre-assembled steel seat sections by Troup Bros. cranes makes possible an increase of more than 50% in seating capacity of Miami stadium.

• The 54-B rig working with 100-ft. boom and 30-ft. jib extension, removes part of a light tower, which is replaced after the new seat sections are installed.

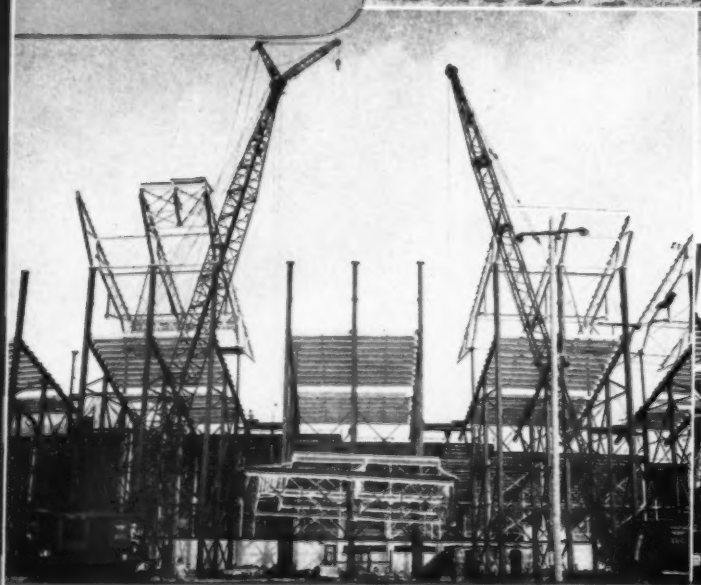
• Used with an 80-ft. boom for preliminary work, the 54-B sets steel foundations for the seat sections. These units, preassembled like the sections which followed, had to be carried about 500 ft.

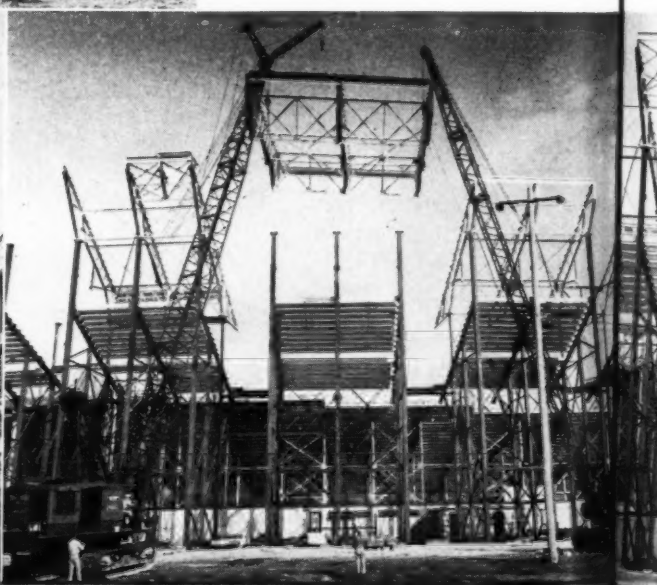
• Ally oop! 23 tons of steel begin their ascent.

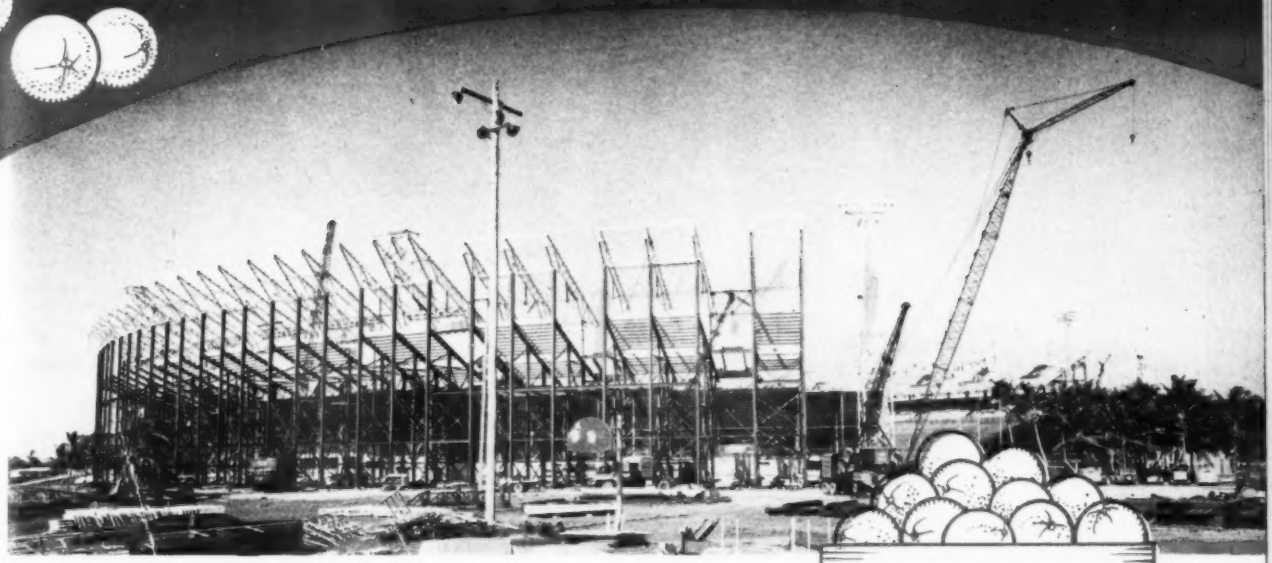
MORE than 60,000 frenzied football fans — 22,000 more than last year — jammed Miami's famed Orange Bowl on New Year's Day to watch Georgia Tech whip Kansas, 20-14. The added capacity was made possible by a well-co-ordinated, efficient steel setting operation speedily completed by Troup Bros., Inc., of Miami, subcontractors on the job to the Calvert Iron Works, Atlanta.

When it became apparent early last year that the demand for tickets to this year's game would far outstrip the seating capacity of the stadium, the Orange Bowl

• At the top of its 90-ft. lift, the steel section is about to be lowered into place.







• A panoramic view of the bowl. The dark portion under the bare new steel framework shows the height of the former stadium. In addition to the two Bucyrus-Erie cranes shown are two Lorain Motocranes used by the Calvert Iron Works to handle individual steel girders in the pre-assembly operation.

Committee awarded a $1,600,000 contract to Gust Newberg, Miami contractor, to add 22,000 seats. The Calvert concern held the subcontract for steel-work, and Troup Bros., in turn, was employed to raise the steel sections.

With only 75 days in which to add the tier of seats to the existing deck, it was decided to assemble complete sections on the ground, rather than lift individual girders to their places. These sections, about 40 ft. by 60 ft., weighed up to 23 tons each, had to be carried 50 to 100 ft. from the assembly points, and lifted 90 ft. to the top of the old deck.

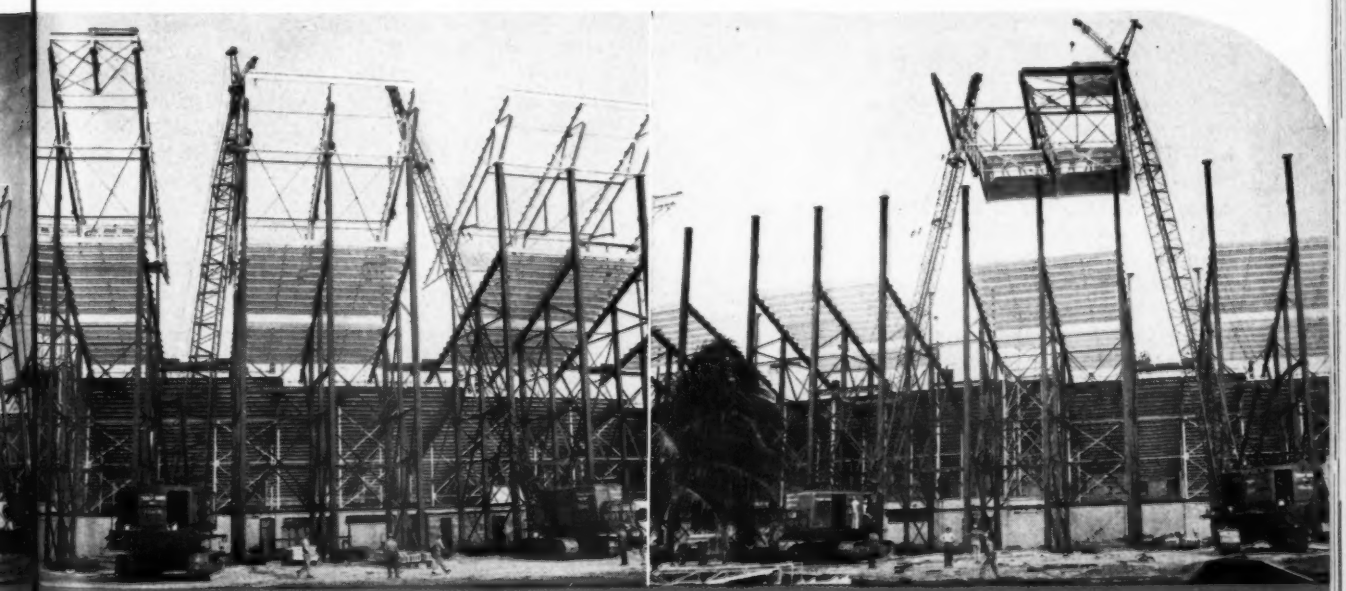
To handle the sections the Troups used two Bucyrus-Erie cranes—a 54-B with 100-ft. boom and 30-ft. jib extension, and a 38-B with 100-ft. boom. The two operators, working their machines in tandem and guided by a spotter, walked the sections over to be bolted to the lower stands of the stadium. The work, requiring precise teamwork on the part of the operators and spotter, was accomplished in three weeks without mishap, 20 sections being handled in this manner.

When two light towers had to be removed temporarily to facilitate erecting of the steel, the 54-B, with its longer reach, was called into play. After the new sections were in place, the machine was employed to replace the towers, and was used, too, in pouring some of the concrete required for seats.

E. K., G. C., and W. J. Troup consider the operation one of their finest, and are intensely proud of the rig's performance.

• Workmen begin bolting the new section to the stands as the operators breathe a sigh of relief.

• A section which houses part of press coop and radio booth is gently swung into position.



Rebuilding Los Angeles

• Counterbalance on monitor keeps stream on one spot for as long as an hour at a time.

Peter Kiewit Son's Co. and Construction Aggregates Corporation are excavating 14 million cu. yds. of sand by the Sensibar hydraulic method for the new Hyperion Sewage Plant near El Segundo, California. Sand is sluiced by 300-ft. water jets, picked up by eductors, handled by 28-in. dredge pumps, and used to improve nearby bathing beaches.

By Robert J. Green

THE HISTORY of Los Angeles — "America's fastest growing city" — contains many a chapter telling of trouble with her sewage disposal facilities.

Two years ago the situation reached a climax. Six miles of excellent ocean bathing beaches, from Venice to El Segundo, had to be quarantined because raw sewage made them unfit for bathers. Water samples tested high in bacteria, and the beach was littered for miles with visible signs of contamination.

As part of a long-term plan for correction of this situation, the first three of several contracts have been let by the Los Angeles Department of Public Works to build a modern high rate activated sludge plant near El Segundo at a cost of about $25,000,000. The rebuilt Hyperion Sewage Plant will be one of the biggest in the world, according to City Engineer Lloyd Aldrich. It will have a normal dry season capacity of 245 million gallons per day, with provisions to take care of 420 million gallons under wet weather overload conditions.

$10 Million Bond Issue

The long range work program is being financed through proceeds from a $10,000,000 bond issue approved by the voters, by a matching state financial grant, and payments by cities and districts discharging sewerage into the system. While the complete program will take about five years to complete, the finish of contract work now under way will remove the beach quarantine.

Present contracts in force include a $3,500,000 job with Guy F. Atkinson for construction of a 12-ft. diameter outfall sewer a mile long, laid under the ocean to depths as great as 50 feet; a $1,500,000 headworks building to James I. Barnes Construction Company; and a $3,500,000 contract to Peter Kiewit Sons Company and Construction Aggregates Corporation for the excavation and disposal along about six miles of beach of some 14,000,000 cu. yds. of sand.

The last contract is one of the most unusual of its type attempted anywhere, and is the biggest application of hydraulic methods done in southern California. This joint venture firm of contractors is using the Sensibar method, on which patents have been asked, to sluice the sand down to dredge pumps which send it to the disposal area along the beach.

Sewage Treatment Plant

• An old brick-and-mortar outfall was demolished by this Bucyrus-Erie 22-B crane using a skull cracker. The crane is shown loading the resulting rubble into a 4-yd. Dodge truck.

When this monster excavation job is done, a 200-acre site will be open and graded for the erection of all the sewage disposal plant facilities. These include the headworks building, an east and west battery of aerators, 25 digesters, 100 feet across, a power plant, shop buildings, an elutriation building, filter and dryer building, and fertilizer storage facilities. Then the contracts for the other work can be let. Most of the buildings will be covered with earth when the job is finished, and the entire site will be elaborately landscaped.

Use Sand to Restore Beach

The excavation of 14,000,000 cu. yds. of sand might pose a bad disposal problem, if it were not for the fact that a natural need for the sand exists near at hand. For many years the coast line from Santa Monica to El Segundo has been eroding. A. G. Johnson, beach engineer, Bureau of Engineering, tells in the Los Angeles Times of a master plan of recreational shore line development adopted in October, 1945. Sand from the present sluicing operation is being used to restore six miles of beach line, widening the existing beach by as much as 350 feet.

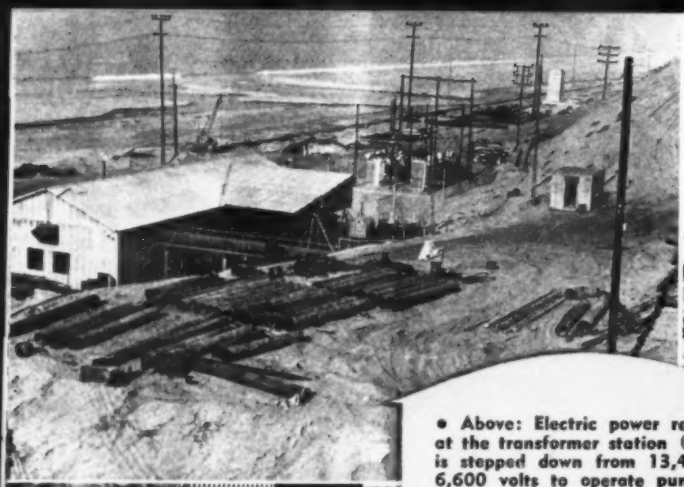
• W. J. Aik[illegible]ft) and L. P. Berzing, are [illegible]d night (respectively) [illegible]on superintendents for t[illegible]iewit hydraulic job.

With high sand dunes 100 feet and more above sea level, ample working space, and a fill location about 90 feet lower than most of the borrow pit, the job resolved itself excellently into a sluicing-pumping project.

Remove Old Outfall

The original 12-ft. outfall sewer line, built with red bricks and concrete mortar about 1907, led through the center of the borrow pit. It was partly exposed, and hydraulic sluicing would uncover the remainder. The demolition and removal of nearly three miles of this old structure was an extensive job in itself.

Peter Kiewit Son's Co. and Construction Aggregates Corp. let a sub-contract for this work to Emsco Concrete Cutting Corporation, a Los Angeles firm of concrete demolition specialists. Emsco soon moved in with sufficient crews and equipment to keep up

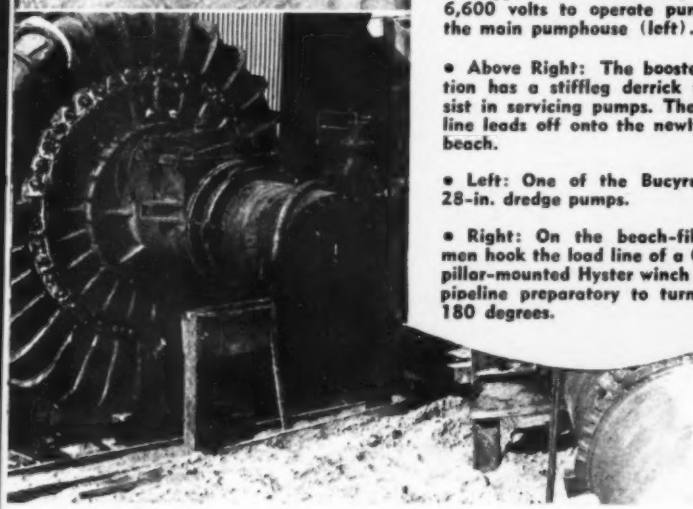


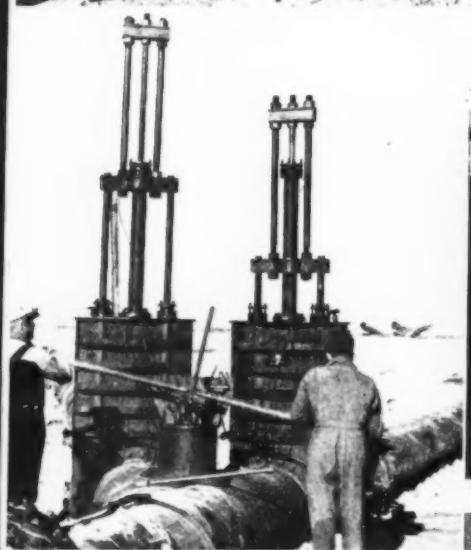
• **Above: Electric power received at the transformer station (right) is stepped down from 13,400 to 6,600 volts to operate pumps in the main pumphouse (left).**

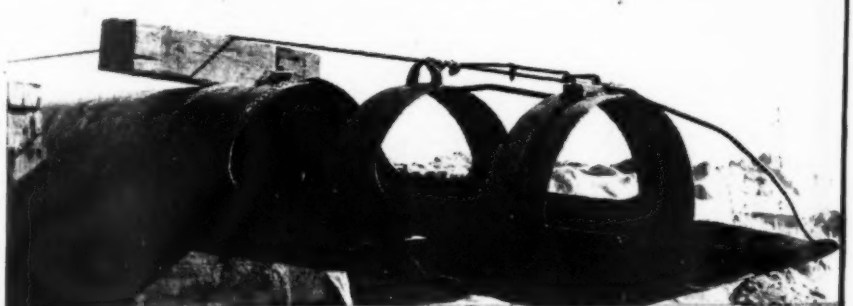
• **Above Right: The booster station has a stiffleg derrick to assist in servicing pumps. The pipeline leads off onto the newly-built beach.**

• **Left: One of the Bucyrus-Erie 28-in. dredge pumps.**

• **Right: On the beach-fill job, men hook the load line of a Caterpillar-mounted Hyster winch to the pipeline preparatory to turning it 180 degrees.**





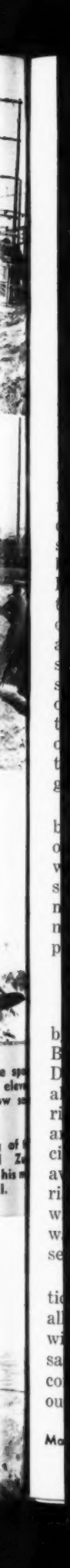


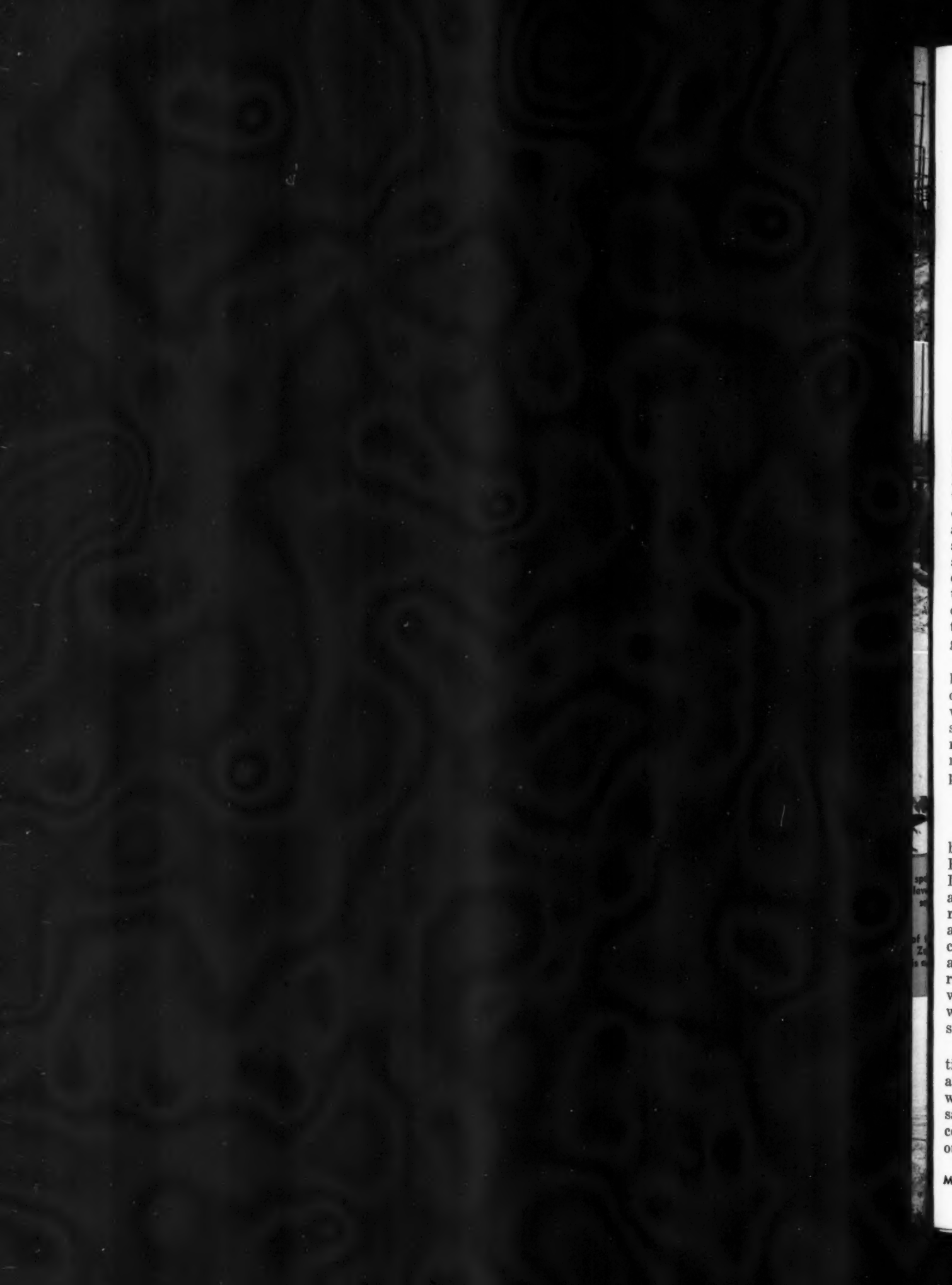
• **Far Left: Hydraulically-operated valves at the beach-fill wyes make a line switch-over easy.**

• **Bottom Left: In the pumphouse repair yard, a welder hard-faces a pump ring liner to resist the terrific wear of the sand-water mixture.**

• **Above: Special discharge sp attachment has lip to cle water, perforations to allow s to drop through bottom.**

• **Below: Skillful handling of discharge line by Virgil Z (left), dump foreman, and his is building a flat, level fill.**





with the prime contractor who exposed the sewer quite rapidly when sluicing began.

A Bucyrus-Erie 22-B crawler crane with a 45-ft. boom was brought to bear the brunt of demolishing the old sewer line. It was equipped with a ¾ cu. yd. clamshell bucket and a 1,200-pound steel breaking ball. Although some of the men in the crew expected to use dynamite in the hard spots, the breaking ball-equipped crane has proved entirely capable.

In fact, a straight drop was usually sufficient to crack open the top of the old structure. Down near the bottom, where the concrete foundation was heavy, it was sometimes necessary to swing the ball by booming over quite rapidly, delivering a sharp blow. While this maneuver required great skill on the operator's part, it was amazingly destructive to the sewer. After experiencing the success of demolition here, Emsco officials had full confidence that the same method would work later on when the machine moved over to demolish two buildings on the grounds.

Removal of the sewer structure began at the point nearest the ocean, and proceeded easterly toward Imperial Boulevard. The scheme consisted generally of removing the structure as the big nozzles with streams of water exposed the brick.

Improve City Playground

Broken fragments were handled by the clamshell bucket of the 22-B crane. An International, a Dodge and one Ford dump truck, all holding four cubic yards, carried the material away to dump areas. Extensive low places in a city playground about three miles away were filled with the material. Considerable difficulty arose when a great deal of non-pay sand was handled in removing the sewer.

It was impossible from a practical standpoint, of course, to load all material four inches and bigger without picking up some of the sand which caved in. Although the condition was never quite solved, output figures were improved upon to account for more pay material. Working eight hours per day six days a week, the Bucyrus-Erie machine put out 51 truck loads of broken debris, on an average over several months, each 8-hour day.

Meanwhile, a series of sub-jobs prepared the way for heavy excavation to begin. Warren-Southwest, Inc., a Los Angeles contractor, built the trestle-work across Ballona Creek near Venice, to carry the sand discharge pipeline. Artukovitch Brothers of Los Angeles relocated the outfall sewer inlet, making a new lead-in to the plant grounds. Macco Corporation of Los Angeles drove steel sheet piles to inclose the lower portion of the main pumping plant, to make a diaphragm around the surge pit, and to inclose various other structures for protection. Macco also drove some wood piles for trestles at the surge pit.

Two 36-in. water inlet lines were laid about 1000 feet out in the ocean by the San Pedro firm of Johnson-Western. Through these lines the supply of sluicing water would come.

Set Up Pump House

Erection of the pump house, the installation of machinery foundations, utilities, and tests of equipment required several months. Six General Electric induction motors, operating on 6,600 volt electric current and capable of delivering 2,500 hp at the drive shaft, were brought in to drive the centrifugal pumps. These were set up on special reinforced concrete foundations.

Pumps are numbered, as are monitor and intake setups, so that all workmen may know the exact location and function of these vital working parts of the job. Sea water is being handled from the intakes to the sluice nozzles by two Meckum 36-in pumps. Three Meckum and one Bucyrus-Erie dredge pumps, all 28-inchers, are used to handle the sand at the pumphouse. Two of them — both Meckums — are located in the

• Other contracts currently in force at the new Hyperion sewage plant include a mile-long submarine outfall being laid from this trestle by the Guy F. Atkinson Company.

• One 360,000-sq. ft. area was brought to such close tolerances by the monitors that only 196 tractor hours were required to finish to grade.

main pumping plant, and another Meckum and a Bucyrus-Erie pump are located in the booster station.

The pumphouse is located at station 35+20, referred to zero at the south end of the project. Far toward the other end, a booster station has been set up at station 146+00. This booster station with its 28-in. pumps — one a Meckum and the other a Bucyrus-Erie — will expend additional power on the material to pump it to the project limit at about station 335+00. When Excavating Engineer's representative visited this project the booster station was in operation, and the sand fill had progressed to station 183+00.

All pumps are being used with impellers 88 inches in diameter, hard faced with cast iron or Ni-hard metal. The latter metal is manufactured under licenses granted by International Nickel Company, Inc., holder of the patents.

Operating pressures inside the pumps are high — 170 pounds per square inch — so it has been necessary to reinforce the pump shells with additional metal. The pumps handle a total solution of about 200,000 cubic yards of liquid each 24-hr. day, about 20 per cent of which is solid material.

The most spectacular parts of the work, however, are the hy-

• Another of the current contracts at Hyperion is the headworks building, under contract to James I. Barnes Company. Making an excavation for part of the structure is the Koehring dragline shown above.

Reduce Time and Costs with

J&L WIRE ROPE

PERMASET-PREFORMED

Measure your wire rope costs in terms of time saved through elimination of delay and you will find that it costs no more to use the best—in fact it is saving money on many jobs. Our engineers will be glad to make a survey for you and make recommendations that will give you greater efficiency from your equipment. Write for information.

J&L STEEL

JONES & LAUGHLIN STEEL CORPORATION

GILMORE WIRE ROPE DIVISION

PITTSBURGH 30, PENNSYLVANIA

J&L *Precisionbilt* PERMASET PRE-FORMED WIRE ROPE

draulic excavation operations for the new sewage plant. Here, in high sand dunes, jets of water 300 feet long sluice the sand away to the eductors, which pick it up and send it on its way. Without a doubt this work might attract hundreds of sightseers each day if the area were open to the public. The contractors have closed the roads into the place, however, as a public safeguard.

Certainly some danger exists, especially on the hills which are being cut away. The long jet of water is directed at the base of sand dunes until great chunks slide down, dissolving under the action of water.

The monitors, or hydraulic nozzles, are steel barrels 20 feet long, counterbalanced on a pivot point. They graduate downward in size to 5½ and 6⅜ inches. Resembling barrels of light field artillery, without wheels, valves or other surface appurtenances, they consume up to 10,000 gallons of water per minute each from the 22-in. water lines which supply them.

A long 6 x 6 wooden boom attached to the barrel of the monitor extends to the rear about 20 feet. A container weighted with sand, rock or metal weights is attached to the end of this boom to keep the elevation of the nozzle steady with a minimum of effort on the part of the operator. To work efficiently, under certain conditions, the stream of water must hold steady in one spot sometimes as long as an hour.

Eductors Pick Up Solution

Under the supervision of A. E. Randall, the job's genial project manager, special hoppers for picking up the material have been built. These are known as venturi eductors. Each consists of a steel box frame, open at the top. A 22-in. water line enters one side of this frame, discharging a jet of water under high pressure straight through the throat of a venturi-type steel tube.

The venturi action inside this tube creates a powerful suction, which draws into the eductor box the mixture of sand and water. Two sizes of eductors are used. The 20-in. eductors use 5½-in.

(Continued on page 58)

W. M. Andrews

The Crushed Stone industry lost one of its finest leaders December 28 with the death of William McClure Andrews. Mr. Andrews, president of the Union Limestone Co., New Castle, Pa., died suddenly of a heart ailment in his home in Youngstown, Ohio.

Mr. Andrews—who was affectionately known as "Bill" to his countless friends — was born in Youngstown in 1885, attended schools in Andover, Mass., and graduated from Yale University in 1908. That same year, he joined the Lake Erie Limestone Co. and became treasurer in 1925. On his resignation from that company in

1932, Bill became president of the Union Limestone Co.

Mr. Andrews was elected to the board of Directors of the National Crushed Stone Association in 1927 and served continuously until his death. He was a member of the Association's executive committee at various times for a total of ten years and was president of the organization in 1942 and 1943.

He is survived by his widow, Louise; a son, Upson, of Youngstown; two daughters, Elizabeth, of New York City, and Mrs. Donald Parson of Framingham, Mass.; a sister, Mrs. Alice Lusk of Falmouth, Mass.; and a brother, Austin, of Washington Depot, Conn.

Bill was nationally known for his ability as an administrator and leader and at the same time he was admired and liked for his kindly, courteous interest in those about him.

Roy Ryan, Sr.

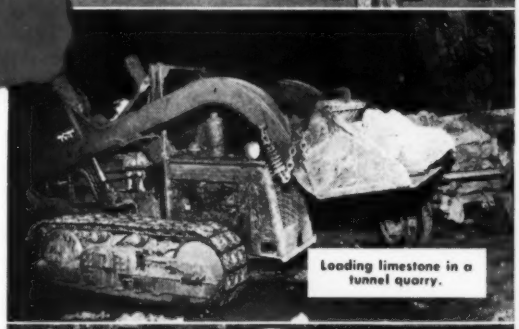
Victim of a railroad accident January 1 was Mr. Roy Ryan, Sr., one of Indiana's leaders in the excavating and construction field. Mr. Ryan, president and secretary of the Ryan Construction Company, Evansville, was enroute to Tucson, Arizona, when his train crashed during a blinding snowstorm in Missouri.

Mr. Ryan, together with his brother, R. E. "Mike" Ryan, directed the work of the company in many important projects of recent years. These included levies on the Ohio and Mississippi, bridges and highways in Kentucky and Indiana, the Evansville Ordnance Plant, and several airports including the one at Evansville.

At the time of his death, Mr. Ryan was a director of the Interstate Finance Corporation, Evansville, and the Evansville Morris Plan. He was active in many of the excavating industry's organizations and was widely known for his leadership and ability to make and hold friends.

GETS IN AND WORKS *where others can't*

Handling fertilizer inside a warehouse.



Loading limestone in a tunnel quarry.

Cleaning up an open hearth furnace.

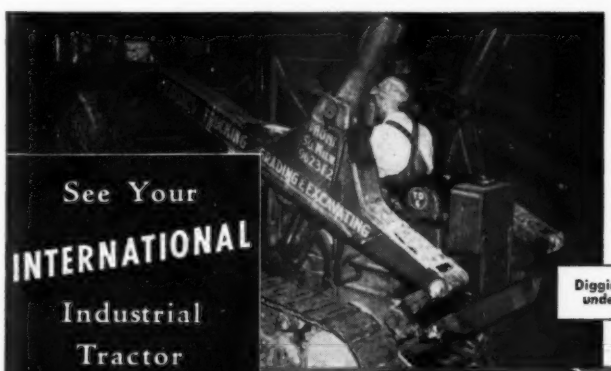
Digging basements under buildings.

MANY jobs you'd ordinarily have to turn down — because of excessively low clearances and close quarters — are in the "routine" class when you're equipped with a Bucyrus-Erie DOZER-SHOVEL.

Look at the illustrations on this page . . . here are DOZER-SHOVELS at work in such "inaccessible" places as a warehouse, a tunnel quarry, a blast furnace . . . here, too, are DOZER-SHOVELS doing such "impossible" jobs as digging garages and basements under existing buildings!

DOZER-SHOVELS are so compactly built that you can easily move them through low, narrow openings, and so maneuverable you can work them at top speed in narrow confines. That means you can take advantage of DOZER-SHOVEL performance features — the speed, dependability and durability for which they're famous — in the many extra ways that help build earnings.

See your International Industrial Tractor Distributor for complete information about DOZER-SHOVELS for T-6, TD-6, T-9 and TD-9 crawler tractors. Bucyrus-Erie Company, South Milwaukee, Wisconsin.



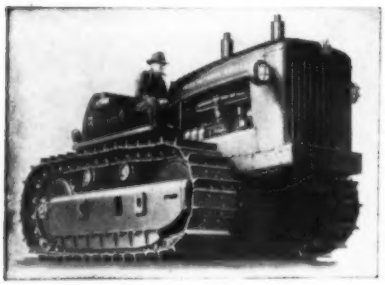
See Your **INTERNATIONAL** Industrial Tractor Distributor

80T47C

For **BUCYRUS ERIE** Balanced Tractor Equipment

Equipment you ought to KNOW ABOUT

"International" Tractor



Manufacturer: International Harvester Company, Melrose Park, Illinois.

Claims: The International TD-24, called the most powerful crawler tractor on the market, is now in production. The following figures serve as an indication of the tractor's power: Horsepower at flywheel — 180; horsepower at driving end of belt from power take-off — 167; horsepower at drawbar — 140.

The TD-24 weighs 36,275 pounds not including fuel, water, attachments, or dunnage.

The tractor is entirely new, including its 6-cylinder, 4-cycle 180-horsepower diesel engine. The machine is said to incorporate the best in modern design, appearance, and performance.

Among the TD-24's features are: Push-button all weather starting with the "International" inbuilt gasoline conversion starting system; tip-toe engine clutch control, hydraulically boosted; eight speeds forward and eight speeds in reverse with speed range from 1.6 to 7.8 m.p.h.; easy gear shifting by means of synchromesh transmission and instant high-low range shift.

Designed for high speed operation as well as tremendous pull, the tractor's track frame assembly has taper-roller-bearing in track rollers and front idlers, new type idler recoil spring and one-piece, welded track frame.

According to the manufacturer, the tractor offers unmatched accessibility when service is necessary due to unit construction and easily accessible assemblies. Needle bearing universal joint compensates for any misalignment and permits the mounting of heavy equipment on front of the tractor.

A complete line of matched tractor equipment is available for the TD-24. This includes angle-blade dozers, bulldozers, land clearing blades, power control units, pusher-plates, scrapers, rippers, logging winches and arches, canopies, oil field winches and pipe booms. All of these have been designed and engineered for the TD-24 through close alliance between the "International" engineering department and the engineering departments of the allied equipment manufacturers.

Light-Weight Wagon Drill

Manufacturer: Ingersoll-Rand Company, Phillipsburg, New Jersey.

Claims: A new light-weight wagon drill, designed for use in the construction, building, and mining fields, is now on the market. Known as the "Wagonjack," the machine combines the drilling stability of a wagon drill with the portability of a "Jackhamer."

Light-weight construction, centralized controls, and ball bearing, pneumatic-tired wheels allow the machine to be transported, set up, and operated by only one man.

Capable of mounting either the J-50 "Jackhamer" or the DA-30 drifter, the "Wagonjack" features a chain feed which is driven by a van-type air motor. Adjustable anchors permit taking up slack in the chain. A self-locking worm gear prevents the drill from jumping forward when a soft spot is encountered. Stop bolts equipped with buffer springs prevent over-travel of the drill at the back end of the tower, and the steel-centralizer bracket performs the same function at the front end. Control handles for both the drill and the air motor are grouped on the air motor mounting, which may be raised or lowered on the tower to suit the operator.

"Positive Grip Clamp"

Manufacturer: Merrill Brothers, Maspeth, New York.

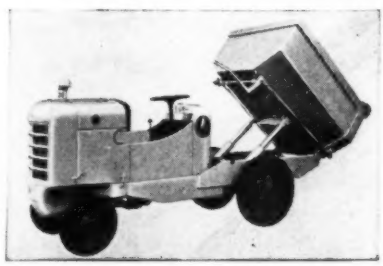
Claims: the new Merrill-Volz "Positive Grip Clamp" is said to provide a simple, rapid, and absolutely safe method of raising or lifting into place such items as large tanks, flanged heads, and other articles that are usually difficult to attach.

It is made in the following sizes: ½-ton, 1-ton, 3-ton, and 6-ton.

"Payloader Buggy"

Manufacturer: The Frank G. Hough Company, Libertyville, Ill.

Claims: The "Payloader Buggy" is a new addition to the Hough line of material-handling equipment. It is a gasoline engine powered four-wheel, pneumatic-tire hauling unit with a 2-cubic yard capacity, hydraulically-dumped body, and is designed to



provide low-cost, high-production movement of bulk materials in and around plants and yards over longer hauls than are practical

with any type of tractor-shovel or loader.

The main parts of the "Buggy" are interchangeable with those of the Model HA Payloader Shovel.

Wire Rope Sling

Manufacturer: A. Leschen & Sons Rope Company, St. Louis 12, Missouri.

Claims: The new "Hercules" Red-Strand, Flat-Laced Wire Rope Sling is a sling made of six parts of wire rope laced together to form a flat and flexible lifting device.

According to the manufacturer, the design and make-up of the sling provides more resistance to kinking, easier handling, larger and smoother supporting area, longer life, and maximum safety. These slings can be used singly, or by attachment to rings or other fittings they can be made into two, three, or four-legged bridle slings.

"Swing-Around" Loader

Manufacturer: Decker Brothers, Incorporated, Denver 2, Colorado.

Claims: The new "Swing-Around" loader is said to eliminate over 50% of movement of crawler tractors and to reduce maintenance time and fuel costs.

Designed to handle mass production loading, the new unit can be used as a shovel, bulldozer, grader, or ditcher. Its bucket swings 180 degrees on a circular track to permit loading one truck, while a second truck is taking position on the opposite side.

Power is obtained from the tractor engine and applied

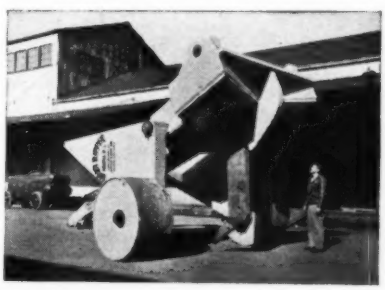
through a hydraulic system. Controls are positive acting and located within easy reach of the operator. According to the manufacturer, the loader can make three complete operating cycles every minute.

Electric Generator Sets

Manufacturer: The Buda Company, Harvey, Illinois.

Claims: This new line of industrial gasoline engine electric generator sets includes twenty-three sizes and models. These are available in DC or AC output, single or three phase and in sizes from 10 KW to 125 KW. Each set is complete and fully equipped with controls, generator, radiator, and engine, all mounted on a self-contained base.

These sets are designed for both standby and standard service. When in standby use, the engine speed is moved up so that greater KW capacity may be obtained on the same set. When used for continuous service, the engine speed is set so it will have a long continuous life.



17-Ton Ripper

Manufacturer: Soulé Equipment Company, Oakland 7, California.

Claims: This new 17-ton custom built ripper, Model R-2, is said to be strong enough to take the pull of three or four 104 to 150 h.p. tractors. According to the manufacturer, the machine can penetrate six feet of hard ground and operate with one, two, or three rooter shanks.

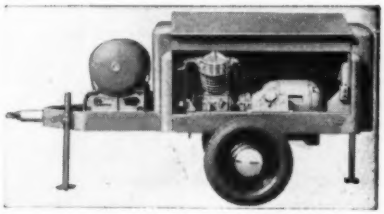
The ripper is recommended for deep-penetration ground breaking ahead of ditchers on pipe line or cable laying jobs. It may also be used to reduce the need for blasting on excavating operations. Overall width is 13′5″, overall length 25′7″; rooter shank is 10′4½″ x 18″ x 5″.

Electric Portable Compressors

Manufacturer: Davey Compressor Company, Kent, Ohio.

Claims: A new line of electric portable compressors in 60-105-160-210-315 c.f.m. capacities has just been announced.

Available with skid, 2-wheel trailer, or 4-wheel trailer mountings, the new units will be known as Air Chief "Electrolics." They will serve as a companion line to Davey's 1948 gasoline and diesel models.



Compressors are of two stage construction with intercooler and safety valve. They are direct driven from 1,200 R.P.M., 220/440 volt A.C. motors of squirrel cage, horizontal type.

300 Ampere Generators

Manufacturer: The Harnischfeger Corporation, Welding Division, Milwaukee 14, Wisconsin.

Claims: These new 300 ampere bare welding generators are now available. With a welding service range of from 30 to 375 amperes, these units are offered to those who wish to build their own DC welders. They are designed for easy coupling to a gasoline engine or power take-off. A V-belt pulley arrangement is said to make exact alignment between power and generator unnecessary.

Conveyor Troughing Idler

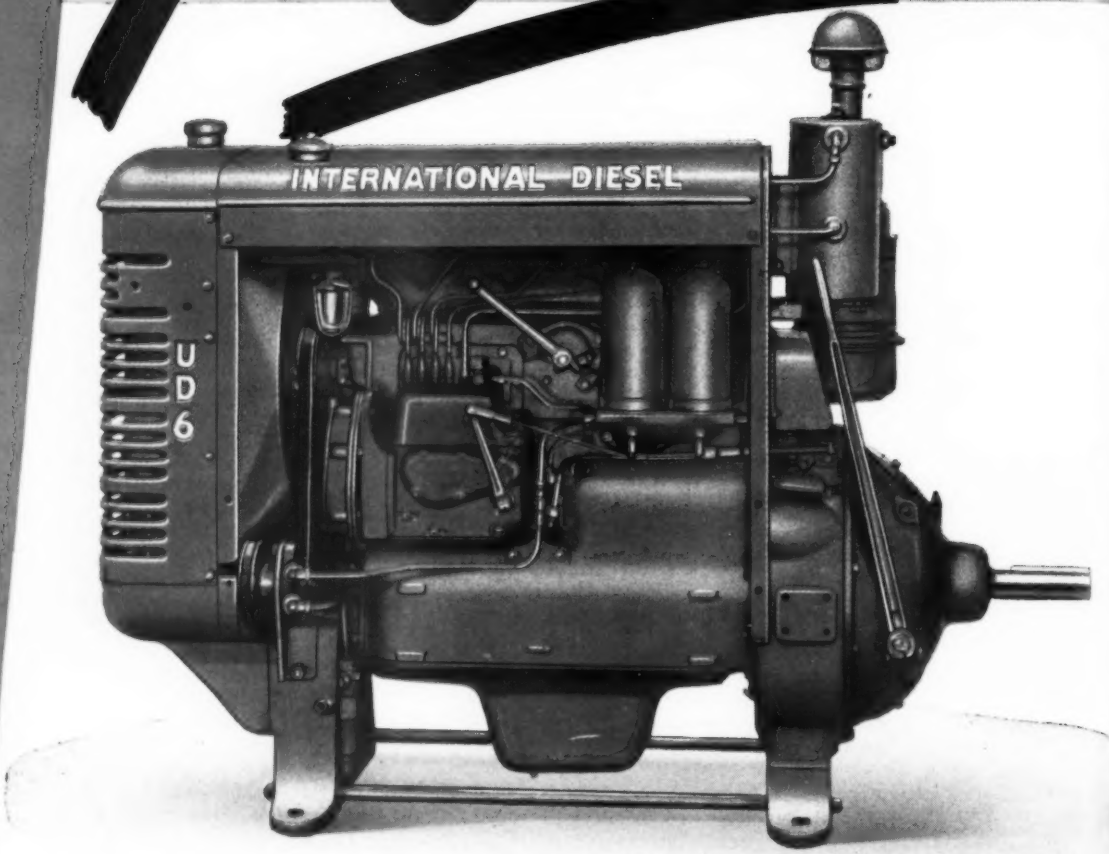
Manufacturer: Koppers Company, Incorporated, Pittsburgh 19, Pennsylvania.

Claims: A new adjustable idler that is said to materially increase the life of conveyor belts has just been announced by Koppers. With this adjustable type of idler the accent is declared to be on increased conveyor belt life. The new design makes it possible to practically tailor-make the idler installation to fit the conveyor belt.

According to the manufacturer, this adjustable idler design is ideally suited for use at locations where any inclined belt changes to a horizontal path. Using a suitable number of adjustable idlers, a vertical curve can be formed, providing the shallowest depth of trough necessary to retain the

(Continued on page 60)

Power



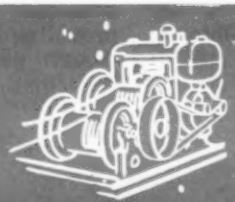
39 *working* Horsepower

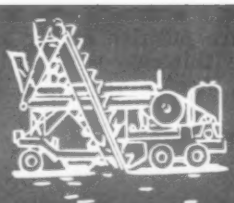
That's what the International UD-6 Diesel Power Unit, above, delivers at 1500 r.p.m. It has all the features which give Internationals superiority on any powering job! No other make of Diesel has them all. A self-contained starting system permits hand cranking or use of an optional 12-volt electric starter for easy starting regardless of weather.

The UD-6 is a smoothly operating, 4-cycle, valve-in-head engine with advanced design fuel injection; thermostatically controlled cooling; full-pressure lubrication; long-wearing, replaceable, file-hard cylinder liners; induction-hardened crankshaft; heavy-duty precision bearings; sensitive, variable-speed governor with torque control; renewable-element oil filters and a large capacity oil-bath air cleaner. Put it to work and it will give you faithful service for many years.

CRAWLER TRACTORS
POWER UNITS
DIESEL ENGINES
WHEEL TRACTORS

INTERNATIONAL





HOISTS

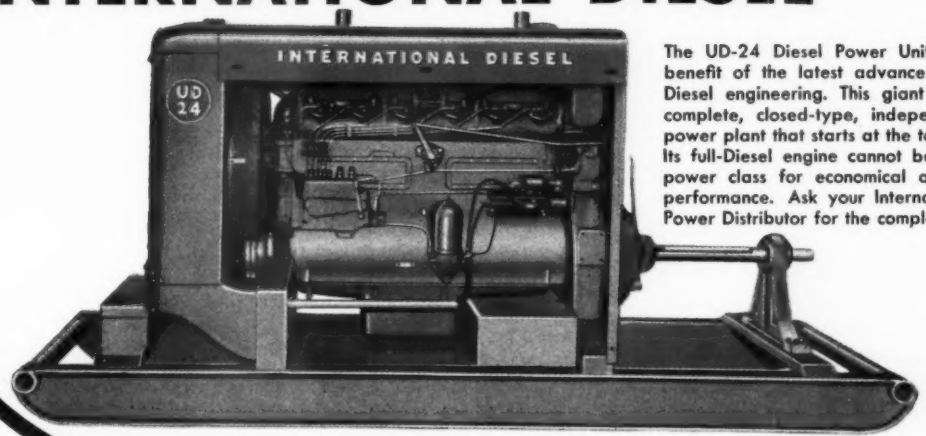
TO YOUR ORDER

INTERNATIONAL Engines and power units are available in a range of sizes that makes delivery of *POWER to Your Order* a simple matter! Simply choose from the International line of *four* carburetor-type and *six* Diesel power units. That's the way to be sure of getting the full rated horsepower, the matchless operating economy, the dependability and long service life which Internationals deliver. The horsepower range is from 22 to 55 H.P. for carburetor models and 39 to 180 H.P. for the Diesels.

Let your International Industrial Distributor help you select the power and equipment you need. He can show you why it's *good business* to standardize on Internationals.

Industrial Power Division **INTERNATIONAL HARVESTER COMPANY** 180 N. Michigan Ave., Chicago 1, Ill.

The NEW 180-Horsepower INTERNATIONAL DIESEL

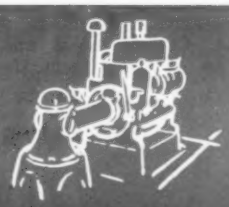


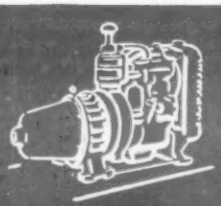
The UD-24 Diesel Power Unit gives you the benefit of the latest advance in International Diesel engineering. This giant of power is a complete, closed-type, independent, portable power plant that starts at the touch of a button. Its full-Diesel engine cannot be matched in its power class for economical and dependable performance. Ask your International Industrial Power Distributor for the complete story.

Delivers 180 H.P. at 1375 r.p.m.

INTERNATIONAL HARVESTER

Industrial Power





Shots from the FIRING LINE

Billion-Yd. Excavation Involved in Panama Canal Sea Level Conversion Plan

Excavation required for conversion of the lock-and-dam Panama Canal to the sea level route recently recommended to Congress as a defense against atom bomb attack would involve removal of enough material to bury a 20-foot highway around the world under nearly three feet of dry earth, with enough mud left over to fill 80 structures the size of the Empire State building, tallest in the world.

Total excavation in the project, which would be the largest single construction undertaking in history, would be 1,070,000,000 cubic yards, 750,000,000 cubic yards to be excavated in the dry, and 320,000,000 cubic yards of wet material to be dredged, the American Society of Civil Engineers was told at its 95th Annual Meeting in Hotel Commodore. More than 2,500 attended the largest four-day gathering in the history of America's oldest national engineering organization at which a symposium on the Panama Canal was the principal theme.

Engineers presenting papers are the men who made two-year Congress-authorized study of "means for increasing the capacity and security" of the canal. Their findings led to the recent proposal to Congress by Governor J. C. Mehaffey of the Canal Zone, that a 10-year project, estimated to cost $2,483,000,000, be initiated to replace the present lock-and-dam canal with a sea level waterway which the engineers say will be virtually indestructible, even by atomic bomb.

Advocate Single-Stage Work

Stressing the fact that the conversion in a single stage by deep dredging is preferable to stage-dredging because "it would be cheaper, requiring shorter construction period, and interfere less with canal traffic," one paper also highlighted the following:

Large shovels or draglines of 25-cubic yard capacity would be used. These are so large a good size truck could be driven into the buckets. Wet excavation would be performed by conventional dredges supplemented by special hydraulic and bucket-ladder dredges capable of dredging to a depth of 145 feet below water surface, deeper than any ever known to have been operated. The single-stage conversion would save five years of the construction period over stage-dredging methods studied.

Material removed in both the wet and dry excavating operations would be loaded directly into dump scows for disposal in Gatun Lake, and some of the material would be utilized in flood control construction necessitated by the conversion. Net savings of the deep-dredging plan over stage-dredging is estimated at $130,000,000. Personnel required would be reduced by 9,000 workers through use of the prescribed methods, with resultant savings reflected in the lower cost of housing, utilities services and mobilization.

Man-hours required in the 10-year project would total 307,910, beginning with 7,460 the first year, accelerating to 41,330 and 41,360 the next two years, and diminishing slightly in the subsequent years.

About two-thirds of the required manpower would be unskilled and largely indigenous to the Caribbean area. Contracts with skilled and technical personnel, to be obtained from the United States, would include payment of transportation from the place of recruitment and return, and transportation of government workers' families and household furnishings would be provided. Cement, steel and lumber would be obtained from the United States.

STATE OF OKLAHOMA
DEPARTMENT OF HIGHWAYS

STATEMENT OF HIGHWAY NEEDS FOR A PROPOSED LONG RANGE ROAD PROGRAM
SHOWING TOTAL REQUESTED ITEMS AND OTHER NEEDED ITEMS BY COMMISSIONERS DISTRICT

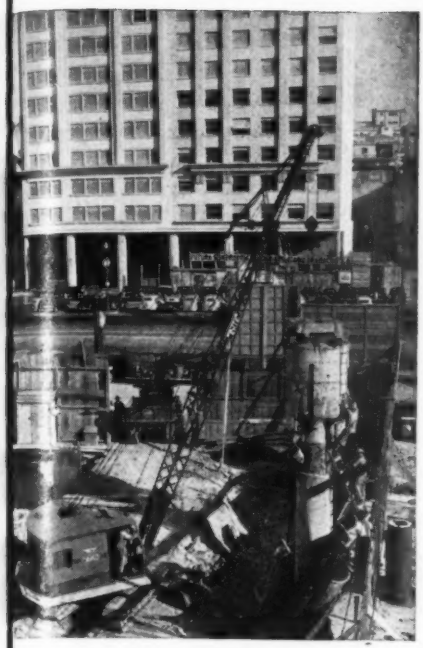
JANUARY, 1948

DISTRICT NO.	COMMISSIONER	TOTAL REQUESTED ITEMS	TOTAL OTHER NEEDED ITEMS	COUNTY TOTAL
1	MR. MULLENDORE	$ 42,214,750.00	$ 34,197,500.00	$ 76,412,250.00
2	MR. CARLILE	22,471,120.00	5,606,400.00	28,077,520.00
3	MR. CRAIG	34,406,280.00	7,636,500.00	42,042,780.00
4	MR. BILES	29,459,499.00	1,841,700.00	31,301,199.00
5	MR. WACKER	12,591,767.00	44,461,300.00	57,053,067.00
6	MR. BARR	21,222,056.00	1,569,500.00	22,791,556.00
7	MR. TITTLE	31,277,110.00	4,582,500.00	35,859,610.00
8	MR. SELMAN	35,441,310.00	4,417,500.00	39,858,810.00
	TOTALS	$ 229,083,892.00	$ 104,312,900.00	$ 333,396,792.00

COUNTY Craig — COMMISSIONERS DISTRICT NO. 1 Mr. Mullendore

ITEM NO.	HWY. NO.	P. O. OR P.A.T. ROUTE NO.	MILES (to TENTHS)	EST. FUTURE TRAFFIC	LOCATION AND DESCRIPTION OF PROPOSED IMPROVEMENT	ESTIMATED ITEM TOTAL
					REQUESTED ITEMS	
1	US 59	9	13.5	525	From Kansas State line south: Light regrading & construct 6"x9"x6"x22' base with a 22' Double Bituminous Surface.	$ 918,000.00
2	SH 82	8035	8.0	750	From US 66 west of Vinita south: Light regrading & construct 6"x9"x6"x36' base with a 22' Double Bituminous Surface.	237,000.00
3	SH 85	8034	3.0	512	From SH 82 east to Delaware County: Construct 36' Roadway Grade, Drainage, Bridges, 6"x9"x6"x36' base with a 22' Double Bituminous Surface.	171,000.00
4	SH 10	8037	19.5	400	From Welch west to Nowata Co. line: Re-grading on 3 miles to widen to 36' Roadway. Construct 36' Roadway, Grade, Drainage & Bridges on 16½ miles & a 6"x9"x6"x36' base with a 22' Double Bituminous Surface for 19½ miles.	1,106,000.00
5	Not on System	None	1.0	Under 300	From US 59 east to Eastern Oklahoma Hospital: Construct 28' Roadway, Grade, Drainage & Bridges with a 9"x20' Gravel base & 18' Double Bituminous Surface.	69,500.00
					SUB-TOTAL REQUESTED ITEMS	$ 2,101,500.00
					OTHER NEEDED ITEMS	
Other	SH 10	8037	5.5	Over 750	From US 59 in Welch, east to Ottawa County: Construct 36' Roadway, Grade, Drainage, Bridges & 6"x9"x6"x36' base & 22' Double Bituminous Surface.	$ 327,000.00
					SUB-TOTAL OTHER NEEDED ITEMS	$ 327,000.00
					COUNTY TOTAL	$ 2,428,500.00

• Oklahoma's new 8-member highway commission has just completed a detailed report assembled on a statewide basis giving authentic information for a projected long-range highway program. According to Director H. E. Bailey, complete descriptions of all needed jobs were assembled by counties and totals obtained for districts and the entire state. Above are sample sheets from the report to the Oklahoma legislature showing sample job listings (bottom) and the totals by districts (top).



• Rio de Janeiro's Avenida Getulio Vargas will soon have another stately office building. In this photo, a Bucyrus-Erie 22-B crane is being used by its owner, Cia. Nacional de Construcoes Civis e Hidraulicas to handle a special rig used to place concrete pile for the building's foundation.

AGC Survey Indicates High Construction Volume

The outlook for construction in 1948 is for a high volume of activity, and a continuation of the gradual upward cost trend until prices throughout the economy show a tendency to stabilize. A nation-wide survey conducted by The Associated General Contractors of America suggested that increased efficiency in operations can come about as shortages of materials, equipment and skilled workmen are overcome, although there are still pressures for increased wage rates and materials and equipment prices.

Significantly, one out of five responding to the survey reported that there were signs pointing to stabilization of costs, that costs had stabilized, or shown a downward trend. Secretaries and managers of the association's 101 chapters throughout the country and its directors were wired for comments.

All types of construction were included in the analysis. The more than 4,500 leading general contractors throughout the nation who are affiliated with the association engage in all kinds of building, highway, and heavy engineering construction. Trends in the survey were as follows:

Volume. 63.4% reported that more work is coming on the market. New construction during 1947 exceeded $12,000,000,000. The survey indicated that estimates of more than $15,000,000,000 for 1948 will be met.

Demand is continuing high or increasing for commercial, institutional, industrial, public utility, highway and housing construction. A factor leading to increased volume is realization that costs cannot decline quickly.

Costs. 78% reported cost trends continue slightly upward, although 12% reported signs of stabilization, 5% reported costs stabilizing, and 4% reported a slight downward trend.

Continued increases were reported due to increasing prices of materials, recent or impending wage increases, increased freight rates, and general inflationary tendencies.

The various indexes of construction costs show steady, gradual increases for the postwar years 1946 and 1947 of from 31 to 37% above the 1945 average. During the same year the index compiled by the Bureau of Labor Statistics of wholesale prices of all commodities—a good indicator of national price trends—increased 54%.

Materials. Gradual improvement was shown with 55.6% reporting an adequate supply of materials, or an adequate supply except for certain items. Principal shortages reported were steel products, 45%; steel and cast iron pipe, 10%; cement 12%; lumber and millwork, 8%; gypsum products, 6%; plumbing fixtures, plaster and plasterboard, 4% each.

Equipment. 60.6% reported an adequate supply of equipment or an adequate supply except for certain items. Principal items reported scarce were shovels, cranes and draglines, 22%; and tractors, 10%.

Labor. 49.5% reported an adequate supply of skilled workmen or an improving supply. Principal shortages of skilled trades reported were bricklayers, 16%; plasterers and other trowel trades, 18%; plumbers and steamfitters, 8%; lathers, 5%.

Last year the association's Governing and Advisory Boards issued two statements warning the public that it could not expect quick or drastic reductions in construction costs, or a return to prewar levels unless the nation suffers an economic catastrophe.

Contracts Let in '47 Only 6% Under Wartime Peak

Dollar volume of contracts awarded in the thirty-seven states east of the Rocky Mountains last year was the highest in the nation's peacetime history, according to the F. W. Dodge Corporation. It was only 6 per cent under the all-time record of 1942, peak year of war construction, and was 4 per cent above the dollar total for 1946.

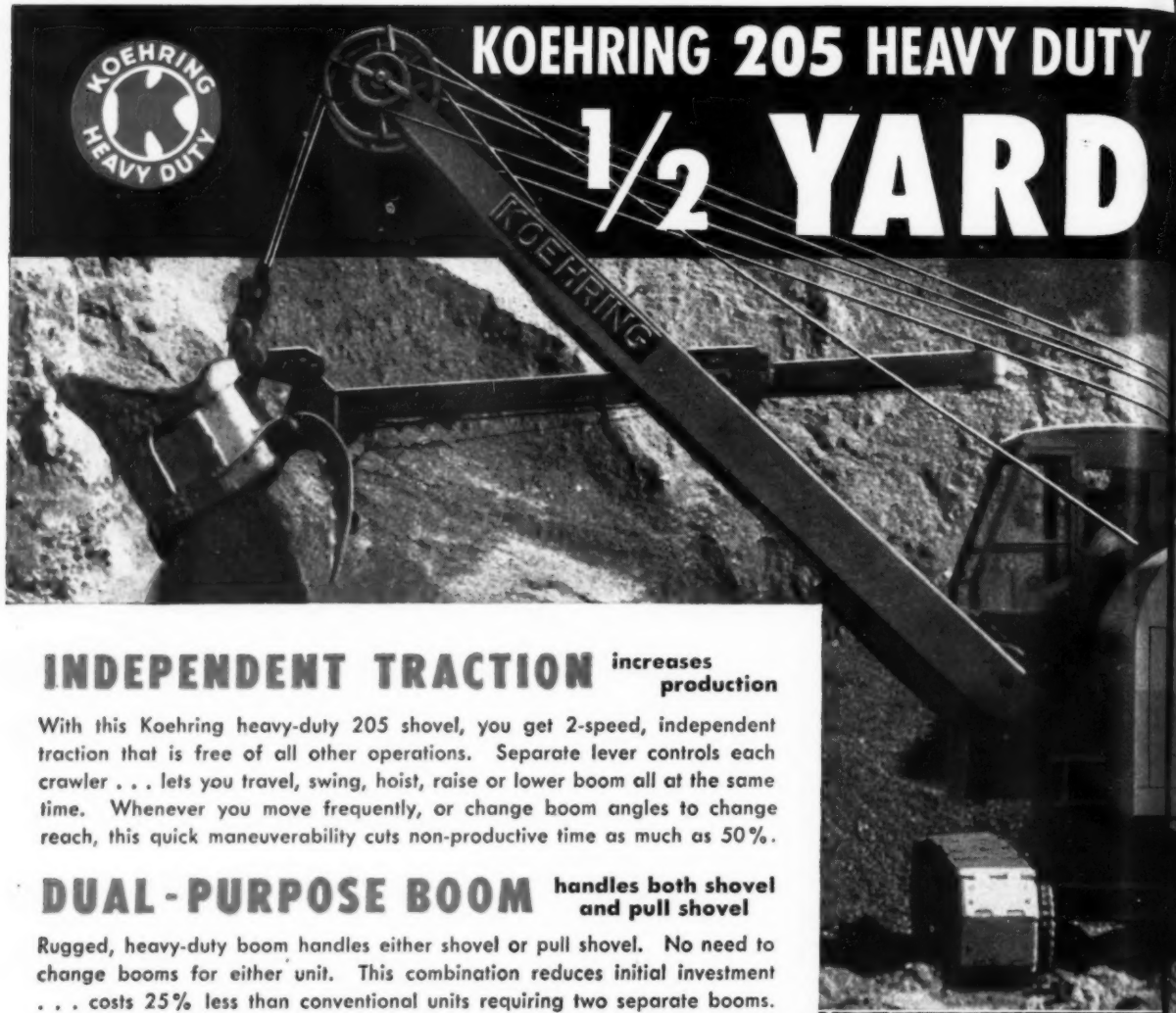
Last year's increase in contract volume did not reflect fully the performance of the construction industry said Thomas S. Holden, president of the Dodge corporation. In an interpretative analysis, he points out that last year opened with an extraordinary volume of construction projects contracted for and started in 1946 and which were carried over into 1947 for completion.

"Last year," Mr. Holden said, "was

(Continued on page 38)

• Subcontractor Civetta Excavating, Inc., is putting down an 87 x 70 x 10-ft. excavation through solid rock for a 1-story taxpayer in Scarsdale, N. Y. In the photo, Ingersoll-Rand wagon drills powered by an Ingersoll-Rand 500 compressor are drilling blast holes. The shovel is a 1¾-yd. Lorain loading to 8-yd. Mack trucks. The builder is Starrett Operating Corp., Bronx.

KOEHRING 205 HEAVY DUTY 1/2 YARD



INDEPENDENT TRACTION increases production

With this Koehring heavy-duty 205 shovel, you get 2-speed, independent traction that is free of all other operations. Separate lever controls each crawler . . . lets you travel, swing, hoist, raise or lower boom all at the same time. Whenever you move frequently, or change boom angles to change reach, this quick maneuverability cuts non-productive time as much as 50%.

DUAL-PURPOSE BOOM handles both shovel and pull shovel

Rugged, heavy-duty boom handles either shovel or pull shovel. No need to change booms for either unit. This combination reduces initial investment . . . costs 25% less than conventional units requiring two separate booms. Saves time and increases all-purpose efficiency. Koehring 205 excavator can also be quickly converted to dragline, clamshell, lift crane or pile driver.

ACCESSIBLE MACHINERY cuts non-productive time

Here is another feature you'll like on the Koehring 205. Every part that requires periodic servicing or adjustment is readily accessible. You have less time out for adjustments. Simple, orderly and compact design of shovel boom, boom-hoist mechanism, traction gear case and main operating machinery provides greater operating ease . . . quick adjustments . . . cuts non-productive time to a minimum. You keep production at peak efficiency.

RESULT — these three big advantages can mean more production, lower costs on your shovel work. Remember, too, this 205 is available on crawlers or rubber tires to suit your job conditions. For complete information on the ½-yard 205 . . . or the bigger Koehring ¾-yard 304, and 1½-yard 605 . . . see your local Koehring distributor or write to him for literature.

Match your shovel production with Koehring shuttling DUMPTORS

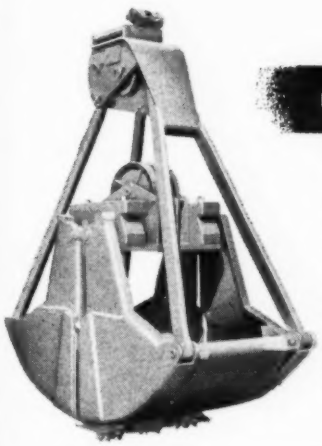
KOEHRING COMPANY
SUBSIDIARIES: PARSONS KWIK-MIX • JOHNSON

EASY ACTION and LONG LIFE

JOHNSON clamshell buckets are built in 3 basic types... every one ALL-WELDED... for big . . . clean payload performance in all kinds of digging.

WIDE REHANDLING

This Johnson Wide-Rehandler Bucket delivers big payloads because all-welded construction permits weight distribution to give most powerful closing action, steps up live loads to the maximum. You get extra strength, longer life, because there are no bolts or rivets to work loose. Bucket is welded smooth inside and out . . . digs and dumps loose material with less resistance. 9 sizes: ⅜ to 2½ yds.

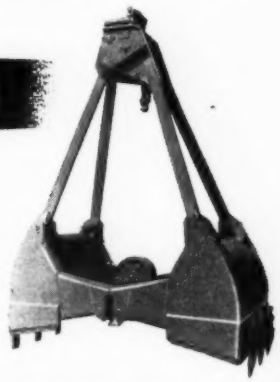


GENERAL PURPOSE

For all-around use on your medium digging and rehandling jobs, this General-Purpose Bucket has extra strength, yet retains proper digging and loading balance. Here, again, welded construction eliminates excess weight, adds to payload capacity. Too, welding helps lower center of gravity . . . puts full, concentrated digging power on lips and teeth. 9 sizes ranging from ⅜ to 2½ yards.

HEAVY-DUTY DIGGING

Here's the Heavy-Duty Digging Bucket for your heaviest excavation and dredging. Its all-welded strength pays big load dividends when bucket is dropped hard for extra penetration. Its low center of gravity lets teeth bite in straight and deep. Weight saved elsewhere by welding strengthens and reinforces every strain point. 6 sizes: from ½ to 2½ yards



With all 3 types of Johnson clamshell buckets you get sealed roller bearings for EASY ACTION and LONG LIFE. Ask your Johnson distributor for complete facts and figures.

MILWAUKEE 10, WISCONSIN

THE C. S. JOHNSON COMPANY

Koehring Subsidiary: CHAMPAIGN, ILLINOIS

Shots

(Continued from page 35)

marked by a very considerable speed-up in rates of completion of all types of residential and nonresidential projects following the industry's faltering performance in 1946 when strikes in major industries slowed building material deliveries, and various governmental controls and restrictions interferred with the smooth functioning of the industry."

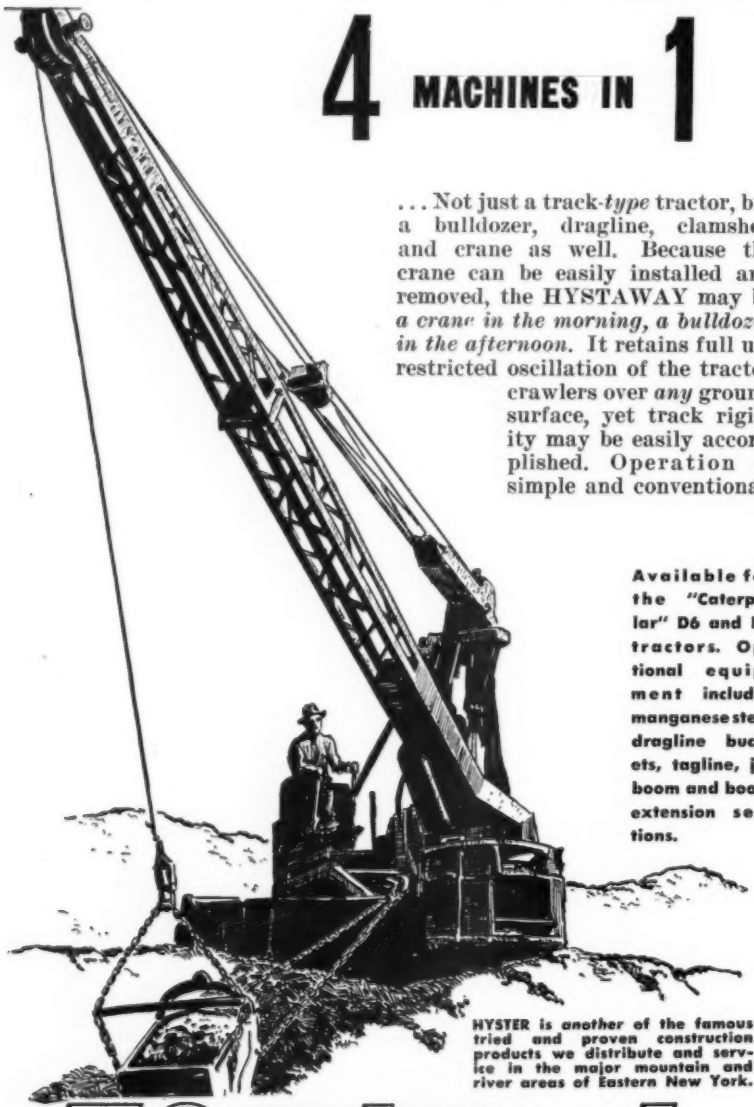
Floor Area Down 14%

The 1947 total for building and engineering contracts in all classifications was $7,759,868,000, compared to $7,489,722,000 in 1946. Within the overall increase of $270,000,000, heavy engineering projects accounted for $259,000,000 and combined residential and nonresidential building accounted for $11,000,000. By a narrow margin, residential contracts at $3,153,773,000 exceeded the dollar volume of any previous year. Reflecting the higher construction costs that prevailed in 1947, there was a 14 per cent decline from the preceding year in floor area contracted for.

Residential building was marked by a substantial increase in rental housing. Investment commitments for apartment projects amounted to $855,974,000, compared to $486,495,000 in 1946, an increase of 76 per cent. In 1947 contracts for public building and engineering projects represented 30 per cent of the dollar total, compared with 23 per cent for 1946. This increase reflected principally the marked upswing in public engineering projects.

New high dollar volume records were set during the year in metropolitan New York and northern New Jersey; western Pennsylvania and West Virginia; and southern Michigan.

While some regions reported lower volume than in 1946, the following reported gains: southwestern Ohio and Kentucky, eastern Missouri, southern Illinois, western Tennessee and Arkansas; Louisiana and Mississippi; western Missouri, Kansas, Nebraska and Oklahoma; and Texas.



4 MACHINES IN 1

... Not just a track-*type* tractor, but a bulldozer, dragline, clamshell and crane as well. Because the crane can be easily installed and removed, the HYSTAWAY may be *a crane in the morning, a bulldozer in the afternoon.* It retains full unrestricted oscillation of the tractor crawlers over *any* ground surface, yet track rigidity may be easily accomplished. Operation is simple and conventional.

Available for the "Caterpillar" D6 and D7 tractors. Optional equipment includes manganese steel dragline buckets, tagline, jib boom and boom extension sections.

HYSTER is another of the famous tried and proven construction products we distribute and service in the major mountain and river areas of Eastern New York.

T. Southworth TRACTOR & MACHINERY CO. INC.

Telephone Albany 5-5255

Glenwood Road MENANDS, N. Y.

Penn. Turnpike Is Termed "Safest High-Speed Road"

The Pennsylvania Turnpike is the safest of all high-speed highways and safer than the average of all other highways, according to a recent report issued by Thomas J. Evans, Chairman of the Pennsylvania Turnpike Commission. Last year the Turnpike established a record new low with an indicated rate of 6.9 fatalities per hundred-million vehicle miles of travel—this in spite of the Pike's 70-mile-an-hour speed limit.

In only one year, 1944, did the fatality rate on the Pike exceed the national average. In 1944 this was essentially a war supply highway and while truck traffic over it reached new highs in that year, all traffic on other highways reached new lows due to gas and tire rationing.

The accident figures cited by Mr. Evans were compiled by the National Safety Council:

Mileage Death Rates on the Pennsylvania Turnpike and Other Rural Highways

(Deaths per Hundred-Million Vehicle Miles)

Year	Penn. Turnpike	Rural Penn.	Rural U. S.
1941	10.7	14.7	15.2
1942	10.9	13.7	12.8
1943	8.0	14.5	13.4
1944	14.5	14.1	13.4
1945	11.2	14.1	13.5
1946	9.8	13.5	12.4

Averaging these comparative figures for the six-year period covered gives the following death rates per hundred-million vehicle miles:

Penn. Turnpike	Rural Penn.	Rural U. S.
10.85	14.1	13.45

Turnpike Usage Skyrockets

During 1947, vehicles of all classes paying tolls on the turnpike totalled 2,969,803—a daily average of 8136, according to Evans. During the three summer months of last year (June, July and August), 1,078,741 vehicles of

(Continued on page 44)

12 PAGE BUCKETS

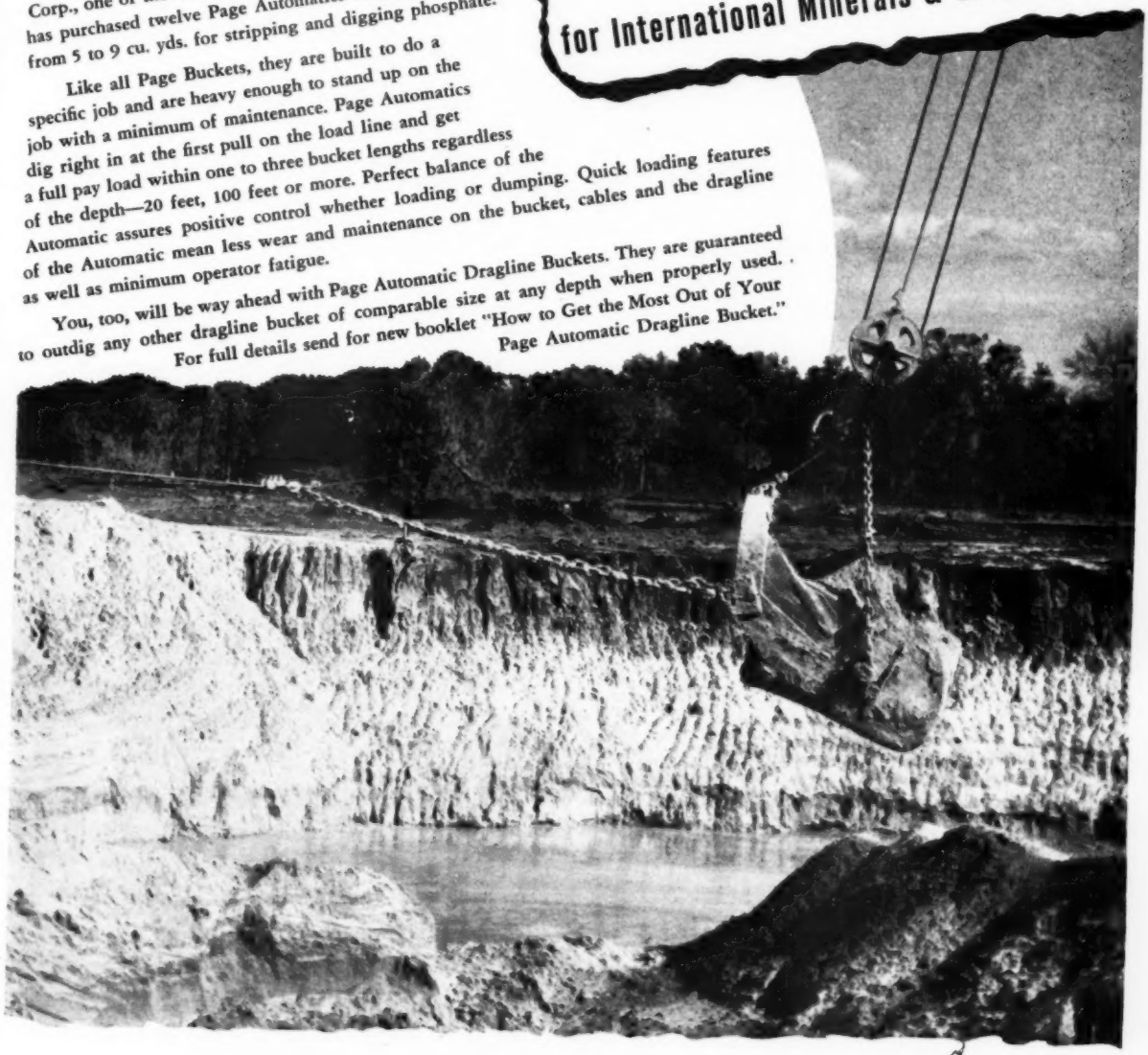
for International Minerals & Chemical Corp.

Whether your stripping or earthmoving jobs run into millions of yards per year like those of International Minerals & Chemical Corp. or a few thousand yards, you'll be way ahead in yards moved and savings when you use Page Automatic Dragline Buckets. International Minerals & Chemical Corp., one of the world's largest phosphate producers, has purchased twelve Page Automatics ranging in size from 5 to 9 cu. yds. for stripping and digging phosphate.

Like all Page Buckets, they are built to do a specific job and are heavy enough to stand up on the job with a minimum of maintenance. Page Automatics dig right in at the first pull on the load line and get a full pay load within one to three bucket lengths regardless of the depth—20 feet, 100 feet or more. Perfect balance of the Automatic assures positive control whether loading or dumping. Quick loading features of the Automatic mean less wear and maintenance on the bucket, cables and the dragline as well as minimum operator fatigue.

You, too, will be way ahead with Page Automatic Dragline Buckets. They are guaranteed to outdig any other dragline bucket of comparable size at any depth when properly used.

For full details send for new booklet "How to Get the Most Out of Your Page Automatic Dragline Bucket."



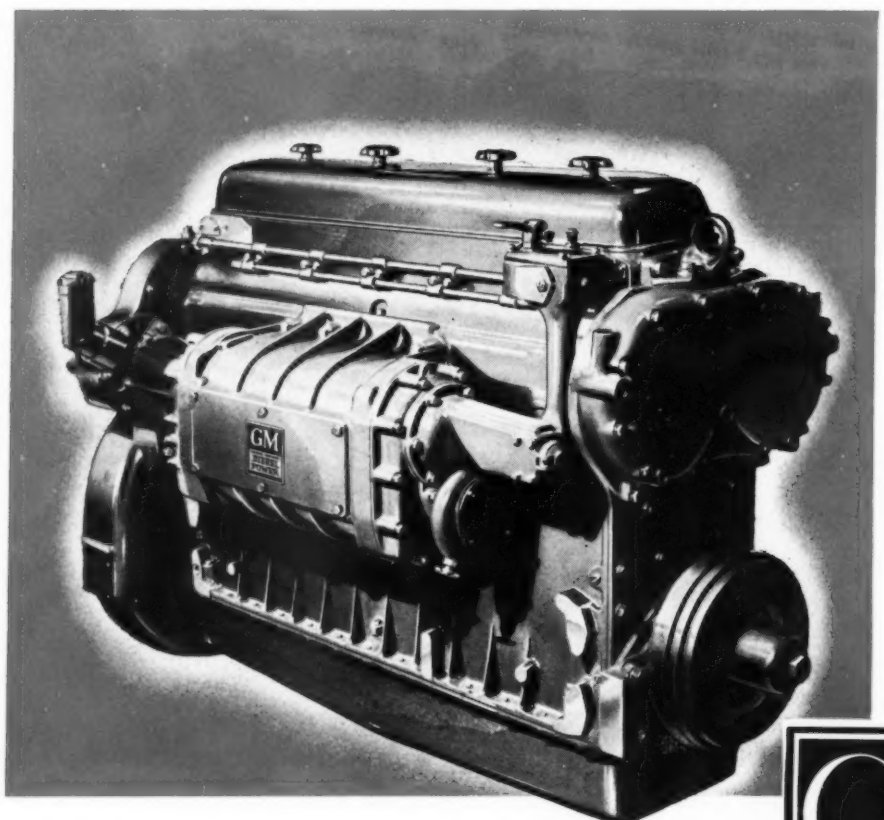
PAGE ENGINEERING COMPANY
Clearing Post Office
Chicago 38, Illinois

BETTER ROADS FOR A BETTER WORLD — 45th Annual Convention and Road Show — SOLDIER FIELD CHICAGO — JULY 16-24, 1948

PAGE *Automatic*

DRAGLINE BUCKETS and WALKING DRAGLINES

GOOD
KEEP GOOD



DETROIT DIESEL ENGINE DIVISION

SINGLE ENGINES.. *Up to 200 H.P.* **DETROIT 28, MICHIGAN** MULTIPLE UNITS.. *Up to 800 H.P.*

GENERAL MOTORS

GM
GENERAL MOTORS
DIESEL
POWER

DIESELS

COMPANY

Every day more and more well-known manufacturers of contractors equipment and other machinery are offering the General Motors Series 71 2-cycle Diesel engine as power for their products.

The reason is clear. These tough, dependable Diesels provide great power in moderate space. They start easily—pick up their load fast—run smoothly and use a minimum of low cost fuel.

GM 2-cycle Diesels produce power at every piston downstroke. They are designed for easier servicing; have no high-pressure fuel lines and offer a maximum of interchangeability of parts, engine for engine.

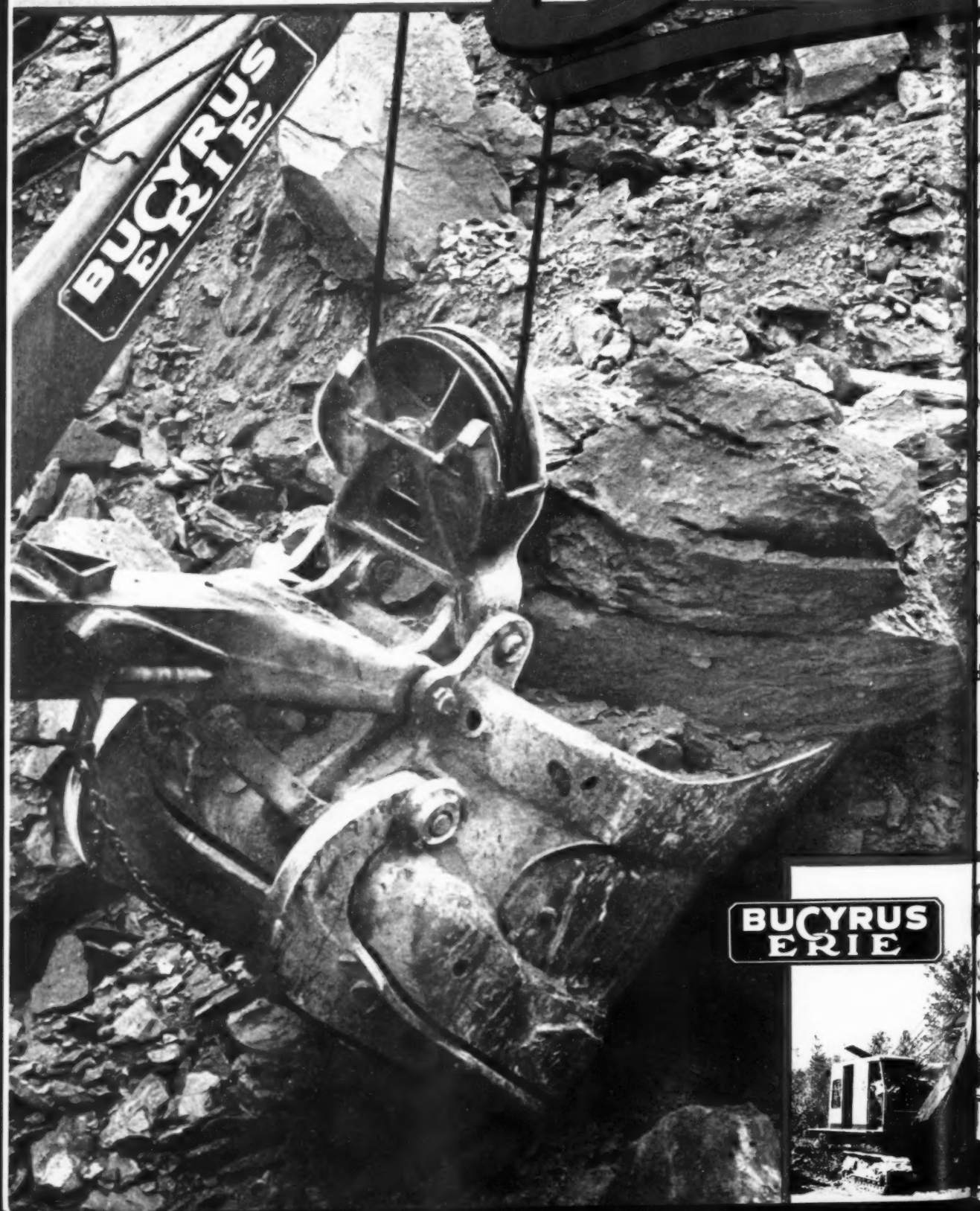
These are the factors which, together with Detroit Diesel's owner service policy and warranty, have earned for GM Diesel its enviable reputation.

LEADING MANUFACTURERS OF THE FOLLOWING EQUIPMENT OFFER GM SERIES 71 DIESEL ENGINES IN THEIR PRODUCTS:

Air Compressors
Arc Welders
Asphalt Plants
Buses
Cableways
Cranes
Distillation Equipment
Ditchers
Draglines
Dredges
Earthmoving Loaders
Evaporation Units
Feed Mills
Fire Pumps
Hoists
Industrial Locomotives
Locomotive Cranes
Logging Loaders
Logging Yarders
Mining Pumps
Motor Graders
Off-The-Road Vehicles
Oil Field Equipment
Pavers
Power Scrapers
Pumps
Road Rollers
Rock Crushers
Rotary Soil Tillers
Saw Mills
Screening Plants
Shovels
Soil Stabilizers
Stave Mills
Tractors
Trucks
Wellpoint Pumps

IT'S WISE FOR YOU TO SPECIFY GM DIESEL

PUTTING *Bite*



INTO SHOVEL WORK

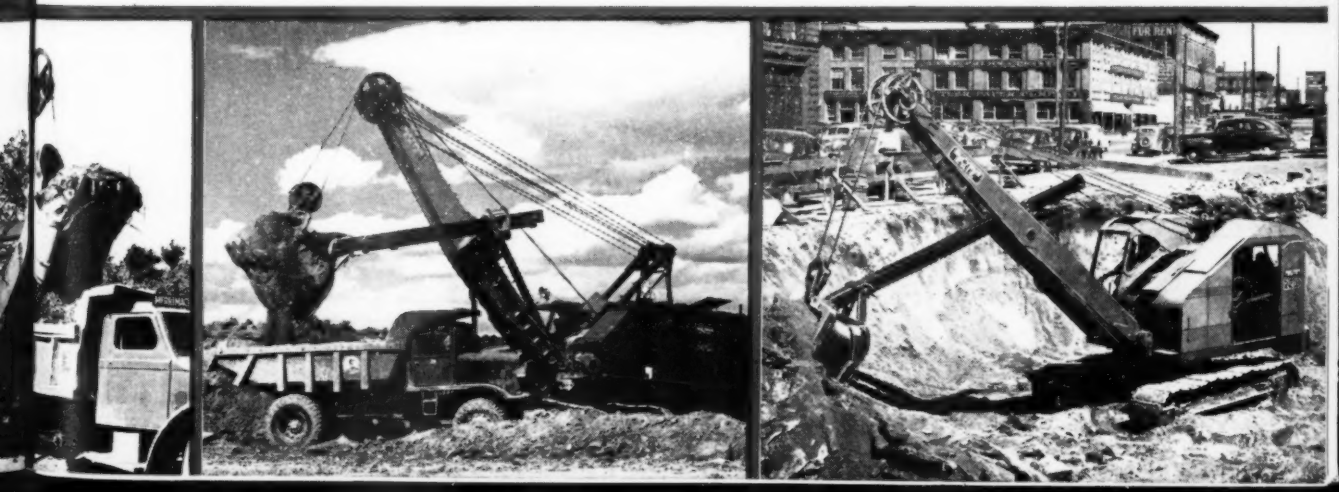
BUCYRUS-ERIE dippers bite forcefully into e bank, load fully and quickly, and stand up der the toughest digging to produce big out- ts over long hours of shovel operation.

A combination of casting and welding puts ength where it's needed, yet cuts down useless adweight to add increased efficiency, while e modern streamlined design means fast fill- g and quick dumping. The renewable lip is alloy steel casting, and the protruding lip elf cuts a clearance for the alloy steel plate des, thus reducing wear. The reinforced door curved to eliminate waste space at the rear the dipper and swings well back to permit clean dumping. Reversible, forged tool steel teeth furnish superior cutting ability, and can easily be removed for resharpening by forging or welding.

For a strong, capable dipper that can be depended upon for a heaping load at every pass, and for effective shovel operation that maintains peak production, you will want to learn more about Bucyrus-Eries. Let your distributor give you further details about Bucyrus-Erie ⅜- to 2½-cu. yd. excavators. They're well worth investigating.

BUCYRUS-ERIE COMPANY
SOUTH MILWAUKEE, WISCONSIN

94E47



• Northwest 6 crane removes cut-down trees during widening and straightening of a stream near Rochester, Indiana. Calumet Paving Company's (Indianapolis) work will reduce loss of farm land through erosion by keeping the stream in its banks.

Shots

(Continued from page 38)

all classes paid toll on the Turnpike—an average of 11,725 per day.

The record number of vehicles using the Pike in one day is 25,431. Mr. Evans points out that there were several 20,000 vehicle days last summer, and at no time were highway or tunnel facilities strained. Only the restaurant service was found to be inadequate in capacity to meet the peaks of summer travel. His report indicates this situation will be corrected before next summer.

In answer to critics who have pointed to the fact that the Turnpike was "subsidized by a substantial P.W.A. grant amounting to $29,250,000 of the original cost of $71,500,000," the report indicates that earnings for the Pennsylvania Turnpike for the year ending December 31, 1947, were sufficient to pay all operating costs and interest on the entire cost of the Turnpike (not taking account of the P.W.A. grant). In addition, there was left for amortization of the hypothetical financing of $75,250,000, the sum of $1,796,450, "proving a net earning potential sufficient to amortize this fictitious cost within 30 years."

Expect Increased Earnings

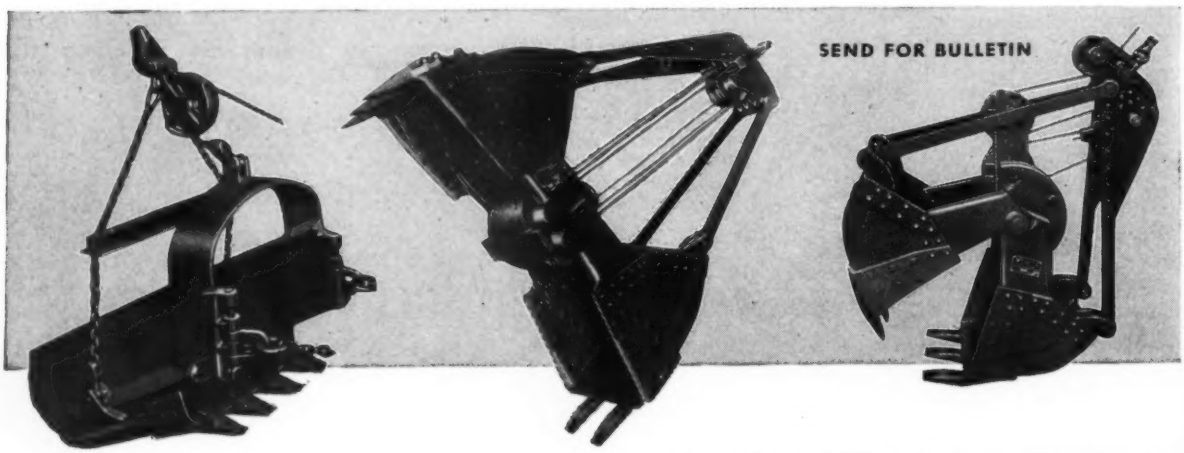
According to Chairman Evans, the Turnpike Commission does not regard the year 1947 as by any means representing the maximum in expected future earnings. "With millions of families still without cars or cars capable of being used for long distance travel or vacationing, and with truck traffic steadily mounting, the Commission expects the curve of earnings will continue to move upward."

(The Pennsylvania Turnpike is not only one of the safest highways in the world—it is also one of the best maintained. Readers are referred to the feature article "Turnpike Maintenance" published in February 1946 Excavating Engineer for more detailed information. —The Editors.)

Stone & Webster Expands

Stone & Webster, Incorporated, has acquired E. B. Badger & Sons Company for the purpose of expanding the engineering and construction activities of its subsidiary, Stone & Webster Engineering Corporation, in the process and industrial fields, according to Whitney Stone and Erastus B. Badger, presidents of Stone & Webster, Incorporated and E. B. Badger & Sons Company, respectively. While the amount involved

(Continued on page 48)



For Longer Life!

WELLMAN

Williams Type **BUCKETS**

• Count on longer life and more efficient service ... due to Wellman original **welded rolled steel construction.** You get the maximum digging power, and exceptional strength—without excessive weight! Specify Wellman, and you'll specify the best bucket for your purpose.

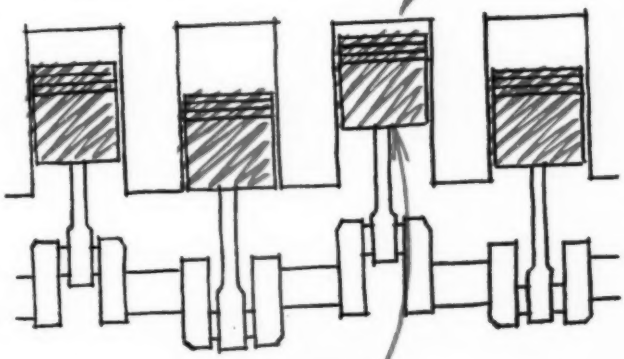
THE WELLMAN ENGINEERING COMPANY
7002 CENTRAL AVENUE CLEVELAND 4, OHIO

LUBE MEMO

Engine overheating caused by stuck rings

Compression loss 30%

400 400 280 400



Hot blowby gases burned piston.

Shop found rings in #2 badly stuck by ordinary oil (blowby has been wasting power).

Foreman claims RPM DELO Diesel Engine Lubricating Oil's compounds will prevent stuck rings 3 ways:

1. Decrease carbon
2. Stop formation of gum.
3. Hold contaminants in suspension (they're flushed out on oil change).

Give shop go ahead on RPM DELO Oil

DIESEL ENGINE RPM DELO LUBRICATING OIL

STANDARD OF CALIFORNIA • San Francisco, Calif.
THE CALIFORNIA COMPANY • Denver, Colo.
THE CALIFORNIA OIL COMPANY • New York
STANDARD OF TEXAS • El Paso, Texas

146 Euclids

Merriman Dam at Lackawack, New York, is a $14,300,000 contract scheduled for completion in 1949. It will provide an additional one hundred million gallons of water daily to New York City. The length of the dam will be 2550 feet and the height 190 feet above stream bed.

EUCLID
THE PIONEER

EUCLIDS

MERRIMAN DAM

Shown above is a 25 cubic yard Bottom-Dump Euclid being loaded by a 4½ yard shovel . . . material is hauled about 1½ miles to grizzly.

Below—a Rear-Dump Euclid discharges its 22-ton load over the bank on the rock section of the fill.

● Merriman Dam, largest rolled-fill dam in the East, will require excavation of 7,000,000 cubic yards of earth and rock. It is being built by S. A. Healy Company, White Plains, N. Y., for the Board of Water Supply of New York City. When completed it will furnish the nation's largest city with 100,000,000 gallons of water daily and will store 50 billion gallons.

EUCLIDS ARE ON THE JOB . . . A fleet of 146 "EUCS" hauls rock, earth and rip-rap from borrow pits to grizzly to fill. Rear-Dump Euclids range in capacity from 15 to 22-tons. . . . Bottom-Dumps from 13 to 25 cubic yards, struck measure. Loaded in various borrow pits by shovels of 2 to 4½ yard capacity, Bottom-Dump "EUCS" haul material to the grizzly and dump without stopping. Both Rear-Dumps and Bottom-Dumps are used to move rock and earth from the grizzly to fill. Loaded hauls average from ½ to 1½ miles in length.

On this huge project as on hundreds of other earth moving jobs, Euclids have lived up to their reputation for top performance. Ability to move big yardage under a wide range of operating conditions has enabled the contractor to keep the work ahead of schedule. The rugged construction, large capacity and staying power of Euclids result in low cost per ton or yard moved.

Your Euclid Distributor or Representative will be glad to show you how Euclids can cut your hauling costs and increase your profits.

The EUCLID ROAD MACHINERY Co.
CLEVELAND 17, OHIO

Shots

(Continued from page 44)

was not stipulated, it was indicated that the transaction was consummated on a cash basis.

E. B. Badger & Sons Company is a 100-year-old Boston engineering and construction concern in the process engineering field. The Badger and Stone & Webster, organizations will at least for the time being continue to operate as individual entities.

New Mo. Commissioner

Governor Donnelly has announced the appointment of former State Senator John C. Harlin of Gainsville to the Missouri State Highway Commission, succeeding E. N. Meador of Caseville.

John N. Powers of St. Louis was reappointed for a full six-year term on the commission, other members of which are Paul C. Jones of Kennett, chairman, and J. Grover Morgan of Unionville.

10-Year Montana Road Plan

Montana's State Highway Commission, after conferences with federal engineers, estimates that a suitable 10-year program to build nearly 8,000 miles of roads in Montana would cost $334,970,000.

The program would include construction of 4,566 miles of primary highway at a cost of $250,694,000, about 3,000 miles of secondary road costing $50,096,000, about 40 miles of urban streets costing $9,180,000, and 525 miles of forest highway at a cost of about $25,000,000.

To meet its share of the cost of such a program, the department found, the state would have to find new funds because "by 1950 present current highway funds will have been expended, including bond proceeds, and anticipated income from that time will have to be used entirely to satisfy maintenance requirements and to service outstanding debt."

Army Engrs.' Col. Potter Takes New Alaska Post

Colonel William E. Potter, Kansas City District Engineer since August 22, 1945, departs this month for Alaska where he will be District Engineer, with headquarters in Anchorage. His successor will be Colonel Paul D. Berrigan, a classmate of Colonel Potter at West Point. Colonel Berrigan was assistant to the Division Engineer, Western Ocean Division, located at Sausalito, California.

During Colonel Potter's stay in the Kansas City District, the District program of flood control, river improvement work and military construction has totaled over 30 million dollars. In January, Colonel Potter opened bids for the largest civil contract in the history of the Kansas City District, when bids were received for completion of the embankment and concrete spillway for the Harlan County Dam, near Alma, Nebraska. The 12-million-dollar Kanopolis reservoir near Salina has been practically completed and the 41-million-dollar Harlan County reservoir is well under way. The latter structure is scheduled to be completed in 1952.

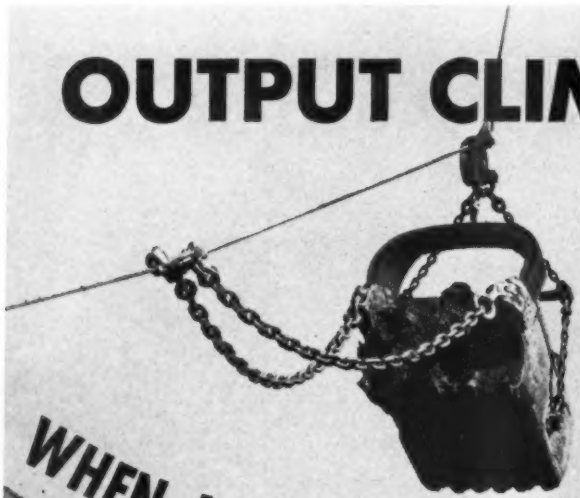
In the municipal area, the Municipal Air Terminal levee and the Missouri portion of the Central Industrial district flood wall have been finished and a start made on the Liberty Bend cutoff near Kansas City. Over 9 million dollars of military construction was completed, including housing projects at Fort Leavenworth, Fort Riley and Salina, Kansas. Conversions for fertilizer production at Louisiana, Missouri, and De Soto, Kansas, have been incorporated in the ordnance plants at these points.

Find Texas' Road Needs Are Double Expected Revenue

Construction and maintenance of a modern highway system in Texas during a five-year period starting in 1949 would cost more than twice as much as anticipated revenue, according to estimates announced by State Highway Engineer D. C. Greer. Costs of such a program were estimated at approximately $738,800,000, or $401,800,000 more than estimated income of $337,000,000 for the same period.

The cost estimate was based on a study of the need for additional roads,

OUTPUT CLIMBS



WHEN A RED ARCH STARTS

JUST a pass or two with a Bucyrus-Erie Red Arch bucket on your dragline tells you why these buckets make output soar. The way your Red Arch comes up with big heaping loads in a hurry tells you that the teeth and cutting edge are correctly angled, that the high arch lets the load *flow* in. The smooth carry shows you that your Red Arch is balanced to cut bobbing and spillage. The quick clean dump illustrates how the smooth, rounded inside and the high arch work together to get rid of the load fast. And from the way your Red Arch stands up, giving you long non-stop use before any reconditioning is necessary, you know that long bucket life will give your output an *extra* boost.

You can get Bucyrus-Erie Red Arch buckets in sizes ranging from ⅜ to 25 cubic yards capacity. The smaller-size buckets are currently available for immediate delivery. They're all offered in several types to meet your digging needs. Let us help you increase your dragline output with a Red Arch!

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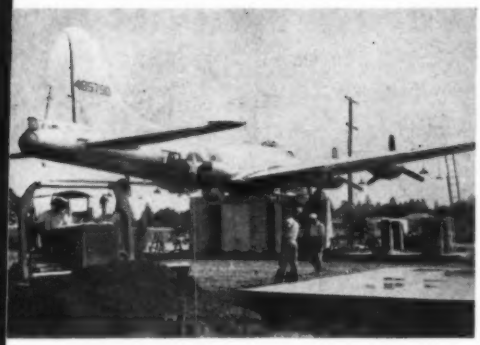

• This Allis-Chalmers WM tractor with Baker bulldozer was used to excavate several thousand yds. of dirt for the slab of a new half-million dollar service station eight miles south of Portland, Oregon. As an added attraction to his new station, owner Art Tracey bought the B-17 Flying Fortress from the government surplus depot at Altus, Oklahoma, and mounted it on top of the station building where it can be entered by a stairway.

paving present roads, modernizing existing highways and extending the farm-to-market road system to 25,000 miles. The income estimate was based on a possible total of $179,000,000 from gasoline taxes and motor vehicle registration fees, plus $140,000,000 in possible federal aid.

Support Congressional Request

The Texas Highway Department will use the study to support its request to Congress that the present three-year postwar federal aid program be extended.

Needed improvements to Texas roads outside the cities are estimated to cost $450,700,000. Needed improvements in urban areas are estimated at $154,300,000, while maintenance and operating costs are set at $125,000,000.

By the end of the current year, the Texas department hopes to have more than 11,000 miles of farm-to-market roads completed. Estimated cost of the nearly 14,000 additional miles to bring the farm feeder system to the 25,000-mile mark is $133,800,000.

Other needed improvements listed by Greer included: $105,900,000 for Dallas, Houston, San Antonio and Fort Worth improvements and new construction; reconstruction in other urban areas, $44,000,000; four-lane development on roads outside cities, $114,500,000; reconstruction and resurfacing, $145,500,000 and new construction, $190,700,000.

"Record Year" for N. C.

With an even larger program scheduled for 1948, the North Carolina Highway Commission laid out a record total of $42,015,693 last year for approximately 10,000 miles of additions, improvements and repairs.

Pointing out that last year's program was "the largest highway construction and improvement program ever attempted by the state," Commission Chairman A. H. Graham said that the commission this year plans to top the 1947 totals "both in total expenditures and in mileage improved."

Reeb New Ohio Road Head

Gov. Thomas J. Herbert has announced the appointment of Earl Reeb to the $9,000-a-year post of Ohio state highway director, succeeding Murray D. Shaffer, resigned. Engaged in engineering work for 36 years, Reeb served during the past year as chief of the bureau of maintenance in the Ohio State Highway Department.

Reclamation Report for '47

The Bureau of Reclamation, during the fiscal year ending June 30, 1947, had under construction 15 dams, 10 power plants, 20 pumping plants, and 304 miles of canals to bring irrigation water to arid farm lands in the West, the 1947 Annual Report of the Department of the Interior disclosed. Eleven dams were started during the year.

Construction slowdowns were imposed both at the start and at the end of the fiscal year, Commissioner of Reclamation Michael W. Straus reported. The first slowdown began August 2, 1946, when a war reconversion regulation banned new work, and continued to October 25. After the winter season,

YOU'LL FIND IT ON PAGE 20

Among general contractors, one of the most popular Blaw-Knox Buckets is No. 672, rated ¾ Cu. Yd. It's a general purpose two-line, lever arm type that digs like a mole. On page 20 of Catalog 2076, there's a photo of it at work, and on page 34 you will find a complete table of weight, measurements and other data you need. Of the more than 100 types and sizes of Blaw-Knox Buckets, this may be the one to speed your work. Write us for *Catalog No. 2076.*

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"Wayne Crane **MOBILITY** *Has Increased Our Profits"*

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"With our Model 22 Wayne Crane we are operating profitably on difficult locations where we couldn't have taken the heavier, less mobile equipment it replaced. This machine's rubber-tired mobility and traction are getting us to and through more jobs than ever before. We've operated our Wayne Crane as a trench hoe and dragline for 21 months at low cost and with a minimum of repair. It's been a real profit-maker for us."

MODEL 22 WAYNE CRANE TRENCH HOE

W. B. JAUERT

ILLUSTRATION — Jauert operator, Vernon Henry, digging a feeder ditch at New Knoxville, Ohio, with a Model 22 Wayne Crane trench hoe.

WAYNE CRANE FEATURES THAT "PAY OFF" IN EFFICIENCY, ECONOMY AND LONGER WEAR:

Rubber-Tired • One-man Operated • Single Engine Powered • 4-Wheel Drive • Full-Functioning • 360° Operation with Equal Stability • Hydraulic Steering • Self-Levelizing, All Welded Chassis • Enclosed Gears Running in Oil • Oversize Clutches and Drums • Anti-Friction Bearings • Full-Vision Cab • Worm-Driven Boom Hoist • Safety Boom Snubbers.

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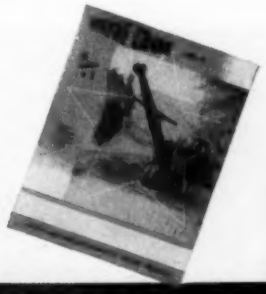

WAYNE CRANE DIVISION—AMERICAN STEEL DREDGE COMPANY INC.—FORT WAYNE 1, INDIANA—U. S. A.

construction resumed at an accelerated rate, and continued until late spring of 1947.

At the time, it became apparent that considerable reductions in the appropriations requested for 1948 fiscal year construction would be made by the Congress, making it necessary to withhold advertisements for bids on a number of projects so as to avoid, insofar as possible, exhaustion of funds on contracts already in existence and requiring progress payments in the 1948 fiscal year on a certain few, but important, projects. Total contracts awarded amounted to more than $100,000,000.

Martinez Dam on the Contra Costa Canal system in the Central Valley of California was completed during the year, and the completed portion of the Colorado-Big Thompson irrigation system was placed in emergency operation on June 23 to provide water from the western slope of the Continental Divide to an important part of the 615,000 acre agricultural area in northeastern Colorado.

New Highway Safety Head

James J. Newman, vice president, The B. F. Goodrich Company, has been elected chairman of the National Inter-Industry Highway Safety Committee, the safety group announces. W. G. Lewellen, vice president of General Motors Corporation, was elected vice chairman and K. B. Elliott, vice president of the Studebaker Corporation represents the Automobile Manufacturers Association.

Other members of the National Committee are: H. D. Tompkins, vice president of the Firestone Tire and Rubber Company, M. O. Anderson, president, National Automobile Dealers Association and William L. Mallon, vice president of the dealers association.

The purpose of the safety committee is to help promote widespread applications of highway safety practices through the organization of state and local safety committees.

Give N. D. '48 Road Plans

North Dakota's Highway Department plans construction of 23 miles of pavement and 102 miles of hard-surfaced roads this year, plus 232 miles of new grading, it was disclosed by Highway Commissioner N. O. Jones, in addressing the annual meeting of North Dakota County Commissioners.

Shortage of engineers was described by Commissioner Jones as the one bottleneck that endangers chances of completing the state's $8,000,000 highway program for 1948.

Re-Elect GCA Head in N. Y.

John A. Reilly, Vice-president in charge of the New York and New England Areas, of The Arundel Corporation, has been installed as President of The General Contractors Association of New York for a second term.

The other officers elected to serve with Mr. Reilly are: Mr. J. Rich Steers, Jr., President of J. Rich Steers, Inc., as First Vice-President, and Mr. Joseph Meehan of John Meehan & Son, as Second Vice-President. Mr. Jules R. Breuchaud, Vice-President and Treasurer of Underpinning and Foundation Company, was elected as Treasurer to succeed Mr. George W. Rogers, who resigned. Edward L. Stanton is the General Manager of this organization.

Bulk of 1947 N. J. Money Went to Multi-Lane Roads

New Jersey's State Highway Department completed $7,610,294 in contracts during 1947 and on the first of the year $24,518,000 in contracts were under way, and $1,300,000 more listed for bids, State Highway Commissioner Spencer Miller Jr. has reported to Governor Driscoll. Before June 30, the end of the state's fiscal year, additional contracts of $27,830,000 will have been let, Miller said.

"During the year just closed," Miller said, "the State Highway Department completed chiefly miltiple-lane highways. This modernization was designed for greater safety in travel, traffic relief and repair of pavement damaged in the compulsory war let-down.

"The unprecedented heavy travel volume in New Jersey required the building of lanes of extra width, a condition not normally faced in any other state. Twenty miles of multiple lanes were

Swinging Frictions that Increase Output

Brake Lining in Rolls for all requirements

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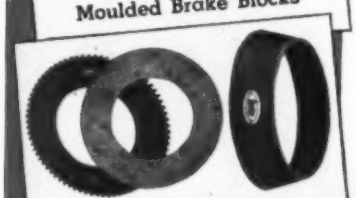

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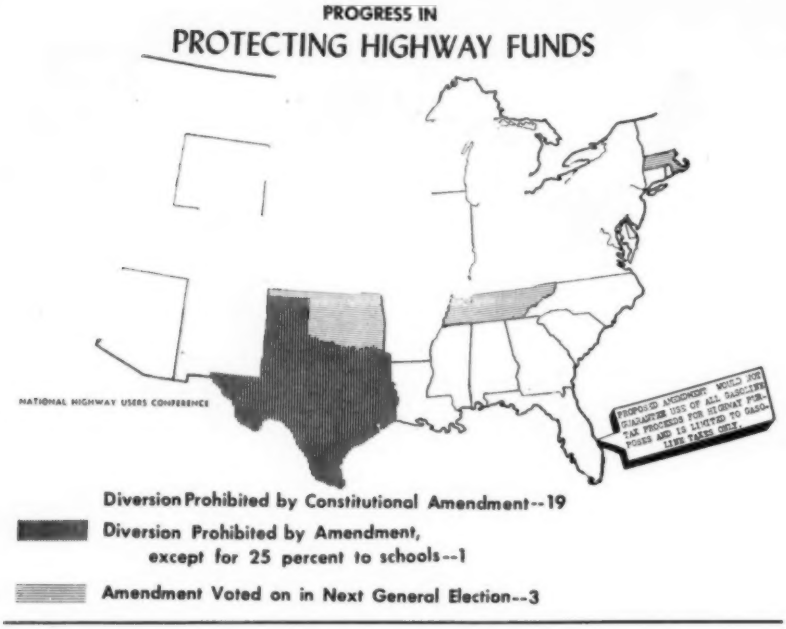
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PROTECTING HIGHWAY FUNDS
NATIONAL HIGHWAY USERS CONFERENCE
PROPOSED AMENDMENT WOULD PERMIT DIVERSION OF ALL MOTOR VEHICLE TAX PROCEEDS FOR HIGHWAY PURPOSES AND IS LIMITED TO GASOLINE TAXES ONLY.
Diversion Prohibited by Constitutional Amendment--19
Diversion Prohibited by Amendment, except for 25 percent to schools--1
Amendment Voted on in Next General Election--3

paved and this was the equivalent of 35 miles of two-lane widths of earlier years. The paving of 13 additional miles now under contract will be the equivalent of 21 miles of the old two lanes.

"Grading completed on six miles of state routes to be paved later represents approximately 20 miles of two-lane highways and 14 additional miles of multiple lanes under contract for grading will total 43 miles under the old two-lane design.

"In the work completed during the year, there were also 11 bridges and two large culverts. Operations are being completed on 32 other bridges and three culverts and bids have just been received for two additional bridges."

For the 1948 calendar year, Miller said, state aid to New Jersey counties and municipalities for road improvement will total $14,872,256. Of that amount $9,155,000 goes to the state's 21 counties and $5,717,256 is split among the municipalities.

$10 Million Nev. Program

Nevada's highway construction expenditures are tentatively set at $10,680,462 for 1948, according to an announcement by State Highway Engineer W. T. Holcomb.

"It should be understood," he said, "that the program outlined in the budget is tentative and subject to modification due to fluctuation of prices and materials and costs of labor. However, every effort will be made to place the listed projects under construction in 1948.

"We also are experiencing difficulty at the present time in securing sufficient engineers trained in highway techniques which require expert attention to design and construction."

Form Southern Group to Check Coastal Erosion

Formation of the Southern States Erosion Control Association, to promote means of coping with coastal erosion, was voted by representatives of five states at a meeting in Sarasota, Fla.

Although only Alabama, Florida, Georgia, Louisiana and South Carolina were represented at the meeting, it was announced that the new group will include all Southern states touching on the Gulf of Mexico or the Atlantic Ocean.

Proposals presented at the initial meeting included: 1. Public ownership of coastal land for erosion control by federal and state governments. 2. A request to Congress for establishment of a $500,000,000 revolving fund to be handled by the Federal Works Agency for erosion prevention. 3. Request to state legislatures to enact measures permitting individual counties to proceed with erosion control.

O.K. N.Y.'s Mt. Morris Dam

Arundel Company, Baltimore, Md., is scheduled to start construction this month of the Mt. Morris Flood Prevention Dam across the Genesee River, N. Y. The firm (and associate companies: Hunkin-Conkey Construction Co., J. C. McGuire & Co., both of Cleveland, E. Dixon Co. and Shosner, Gordon & Hinman Co., both of Los Angeles) was awarded the $20 million contract last month as the low bidder after approval of Chief Engineer R. A. Wheeler and Col. Herbert D. Vogel of the Corps of Engineers.

Access roads and some preliminary work have already been completed. The concrete structure, which will store 337,000 acre-feet of water, will be 1,000 feet long by 230 feet high (above the stream bed) and will have a central overfall spillway section.

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AND ABUSE MAKES IT TOUGHER!
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(Trade Mark Reg. U. S. Pat. Off.)
11% to 13½% MANGANESE-NICKEL STEEL
HOT ROLLED PLATES
They're back again—MANGANAL HOT ROLLED PLATES to rescue worn equipment from the scrap pile! Patches power shovel buckets, drag lines, etc. Ideal for fabricating new parts. Work hardens under impact and abrasion. Can be rolled and bent hot or cold. Easy to weld with Manganal Bare or Special Tite Kote Welding Electrodes.
Bucket, illustrated on right, rebuilt like new. Manganal Plates ¾" thick used on lip, 1" thick used on heel.
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Everybody likes to Dress Up

So? You didn't recognize your old friend? The new duds fooled you!

Yes, it's Bethlehem Wire Rope, the same reliable rope that's been serving you well for a good many years—but now it's all dressed up with a brand-new reel design.

Fine birds deserve fine feathers. If rope could talk, ours would be bragging about its new go-to-meeting clothes. But regardless of its togs, Bethlehem rope will still do the same down-to-earth job for you . . . handling your toughest loads dependably and economically. Ask for full details.

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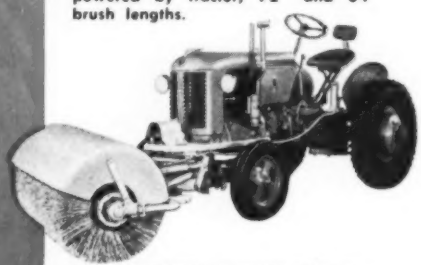
MODEL B UNIVERSAL ROAD SWEEPER: engine driven; sweeps to right or left; 78" path; selective brush speeds.

TRACTOR SWEEPERS are available for Case and International tractors — powered by tractor; 72" and 84" brush lengths.



ENGINE-DRIVEN SWEEPER-BLOWER — A complete sweeper-blower combination with its own engine drive — can be towed by light car, truck or tractor. Powerful blower insures removal of dust and fines from pockets and crevices.

There's a Hough machine for every sweeping job. Sizes and types are available to remove snow, dust, debris, etc. from streets, alleys, highways, airport runways and aprons . . . . . to clean pavement for black top and other resurfacing, to clean tops of strip pit coal seams. Every unit is built to do a fast, complete job of sweeping . . . is the product of 27 years of sweeper-building experience. So, come to "sweeper headquarters" with your sweeper problems . . . . . write for full information and the name of the nearest Hough distributor.

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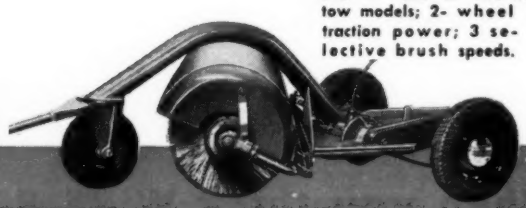
TRACTION DRIVEN SWEEPERS — one or two-way tow models; 2- wheel traction power; 3 selective brush speeds.



NOT in the *Contract*

A contractor wandered in at 3 a.m. after a glorious evening.

In a few minutes a series of unearthly squawks howled out of the radio.

His wife looked into the room and discovered him twisting the dial back and forth frantically.

"For heaven's sake, what in the world are you doing?" she exclaimed.

"G'way. G'way. Don't bother me," he yelled. "Somebody's locked in the safe and I've forgotten the combination."

Willie: "Mother, do fairy tales always begin with 'Once upon a time'?"

Maw: "No, dear, not always, they sometimes begin with, 'My love, I will be detained at the project tonight'."

Elmer, Jr., had to be in the house because he had a slight fever. To pass the time he looked out the window and mumbled nursery rhymes. "Roses are red, violets are white," he chanted in sing-song fashion.

"No, darling," his mother corrected him, "violets are blue."

"No, Mother," he insisted, "Violet's are white. See, they're hanging on the line now."

"So you're going to take my daughter from me without any warning?"

"Not at all, sir. If there is anything about her you want to warn me of please tell me."

A university professor—one of the absent minded type—was recently awakened by the telephone at 2 A.M. The caller inquired, "Is this one, one, one, one?"

"No," answered the professor. "It is eleven, eleven."

"Oh, pardon me," said the caller. "Wrong number. Sorry I disturbed you."

"That's all right," rejoined the professor. "I had to get up to answer the telephone anyhow."

The old man noticed the young fellow with a bottle in one hand and his arm around a pretty girl. "The dern whippersnapper is wastin' a lot o' time," mused the O. M. "He can drink when he gets old."

Then there is the story about the fellow who told his doctor that he didn't want to get well because he was in love with his nurse.

He didn't. She was the doctor's wife.

"I can't quite diagnose your case," said the doctor. "I think it's drink."

"All right, doctor," the patient gravely replied, "I'll come back when you're sober."

"And you mean to tell me that in your section of California you have 365 days of sunshine a year?"

"Exactly so, sir, and that's a mighty conservative estimate, too."

"Have any of your childhood wishes been fulfilled?"

"Yep. When Mom used to jerk me around by the hair, I wished that I didn't have any."

"You're an apt boy. Is your sister apt, too?"

"If she's tempted, she's apt to."

Psychiatrist: "So you think you are actually sane now. If we give you your liberty, will you leave liquor and women alone?"

Inmate (former skinner): "I sure will."

Psychiatrist: "You'd better stay here. You're still crazy!"

"I thought I felt a draft!"

Sewage Plant

(Continued from page 28)

water nozzles, and the throat diameter measures 12⅞ inches. The larger 22-in. eductors have 6⅜-in. nozzles and 13¼-in. throats.

Although the eductor box is seldom if ever visible, its effect can always be seen in the churning waters of the pool, and it gives a low roar when in operation. Randall's men have also developed an interesting way to make the eductor dig its own hole down to an efficient level, thus relieving a bulldozer or crane of this work.

They use a standard dredge pipe swivel joint, about 40 feet back of the eductor box. A single long section of pipe connects the two. The eductor will dig itself in and lower itself to the proper elevation in a few minutes, turning on the swivel joint. The surfaces of this ball joint are oiled occasionally to keep it free.

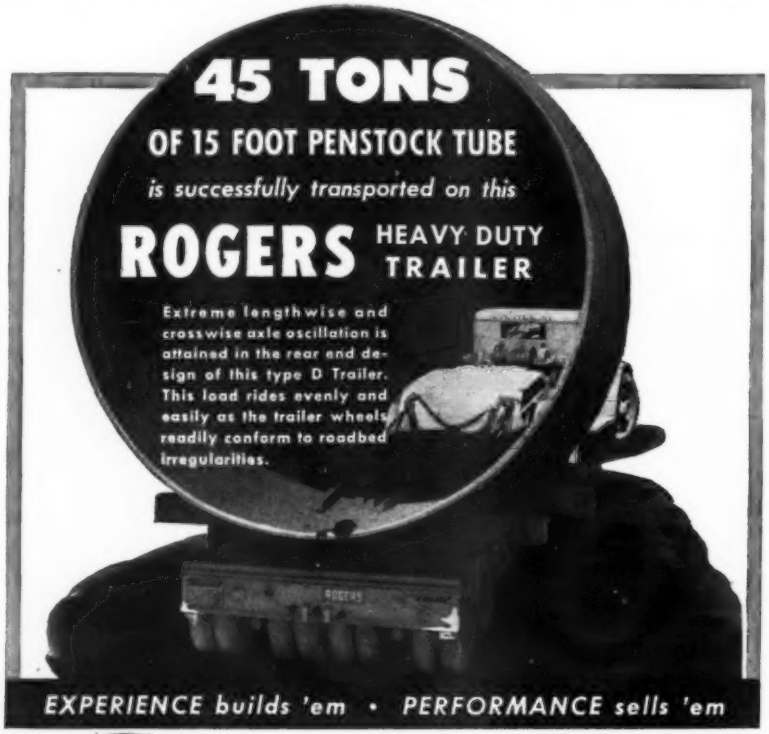
These eductor boxes will actually pick material up several feet, because the venturi tube develops about 10 inches of vacuum to suck the material in. The 22-in. discharge lines from the eductors lead down grade toward the surge pit, 2150 linear feet of pipe in one run having been the longest used so far.

In locations near the surge pit, monitors and flumes are used without resorting to the eductors. As the water stream plays on the base of sand banks, the solution of sand and water flows rapidly down grade to a pool formed by dikes, where the material enters a pipeline. Dikes and access roads are built by a Caterpillar D-8 bulldozer which works full time in the borrow pit.

Flumes Less Efficient

Straight 28-in. flume lines with a water jet at their intakes have also been used up to 950 feet in length to carry material down to the surge pit. However, the gradient of these lines must be laid to closer limits than the eductor lines. Unless the flumes pitch downward on a grade of at least 4 per cent, they will not carry efficient amounts of solid matter, and they show a propensity for choking up. While the use of flumes is still in vogue for short distances near the surge pit, the more efficient eductor lines must of necessity be used for the longer distances.

Ordinarily Project Manager Randall has three monitors, three eductors and a flume line in use. There are also some auxiliary monitors set up at various places to clean up. The first 300-ft. cut in the job was opened up along the line of the Imperial Highway, and soon saw the relocation of power poles and various utilities. One of


45 TONS
OF 15 FOOT PENSTOCK TUBE
is successfully transported on this
ROGERS HEAVY DUTY TRAILER
Extreme lengthwise and crosswise axle oscillation is attained in the rear end design of this type D Trailer. This load rides evenly and easily as the trailer wheels readily conform to roadbed irregularities.
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Long experience and intensified experimentation has enabled Owen engineers to originate designs, utilize special alloys and develop methods of manufacture that reduce weight, increase strength and provide greater wear resisting qualities.

"Owen Clamshell Buckets Insure a Bigger Day's Work."

The Owen Bucket Company
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Branches: New York • Philadelphia • Chicago • Berkeley, Cal

the interesting facts about this project-limit-line cut was the finishing of grade to close tolerances by the monitors. About 360,000 square feet of slope area was finished so close that only 196 tractor hours were required to put it in acceptable condition.

Sand and water from the pipelines enters the surge pit across two trestles, and drops down to flow to the mixing well. At intervals of 40 feet, gates on the under side of the inlet pipes regulate the flow of material to all parts of the pit. These gates are controlled by hand operated winches. The sand and water then moves on through a 4-in. bar screen through gates which lead to the mixing chamber in the center of the surge pit.

Here the sand and water is taken in, at the maximum possible proportion of solids which the pumps will handle, through the pump suction to the pumphouse. Ordinarily there is an excess supply of water from the eductor lines which drains off, but when extra water is needed at the mixing well, auxiliary water lines and jets are available there. The mixing well has six gated openings on two sides to admit water and sand. These gates are opened and closed by hydraulic rams, and measure 24 inches in diameter. The mixing chamber box itself is 23 feet high, and 10 x 12 feet in section.

Beach Placing Method

The sand is being placed by the pipeline at the rate of about a million cubic yards per month to make what will be the finest bathing beach on the Pacific coast. The first deposit of fill material is being formed by carrying the pipeline only about 150 feet outside the present beach line. This method causes a layer of fill to be laid down close inshore, building a solid beach at that point. Lagooning, or back-wash, is thereby prevented.

Wyes in the pipeline, with hydraulic gates, permit short ribbons of fill to be curved out at an angle from the main line toward the outer limit of the fill. A special discharge spoon at the end of the pipeline spreads the sand out uniformly and to good grade, meanwhile dissipating the force of the water by shooting it upward from the spoon.

A Caterpillar D-8 tractor with a Hyster rear-end winch and boom is used on the dump to roll pipe sections, and to load valves or other heavy pieces. The pipeline, consisting of spiral steel sections 40 feet in length, is laid largely by this machine and a small labor force. A Caterpillar-drawn Athey trailer is used on the fill to haul pipe sections, valves and tools.

Altogether, the job of fill with

COLMONOY—the "Miracle Rod"
in the HARD FACING FIELD

COLMONOY NO. 1

ORDER A BOX TODAY

Get it from your jobber and prove our claims on your next tough job.

Truly the miracle rod in the low-price hard-facing field. It's hard — from 62 to 64 Rockwell C. It's tough — withstanding any impact. It outwears other rods in its price class 2 to 4 times. It's easy to weld. The diamond-hard Colmonoy crystals in the flux coating alloy with the special steel core during application.

Your best bet is Colmonoy No. 1 for manganese or carbon steel parts such as dipper teeth, bucket lips, dragline buckets, bulldozer blades, sprockets and others that must take a lot of punishment.

Jobbers: A few desired territories are open. Write for details.

WALL COLMONOY CORPORATION
Hard Facing Alloys
19345 JOHN R STREET • DETROIT 3, MICHIGAN

The Sauerman Tower Machine that looms up in the background is completing a basin 1250' long, 360' wide and 30' deep which it dug for a sewage treatment plant. The machine loaded the spoil into dump carts for haulage to a fill.

Cut Costs the Sauerman Way

The job pictured above is a good example of how Sauerman equipment simplifies dig-and-haul work. Here you see a Sauerman Tower Excavator equipped with 4 cu. yd. Crescent scraper bucket handling a large excavation all by itself — digging, hauling, lifting and dumping in a continuous, rapid process — controlled by one operator.

Hundreds of other examples of how Sauerman Machines have cut costs on different long range material handling jobs — both large and small — are illustrated in the large Sauerman Catalog together with specifications of the machines themselves. Write or wire for your copy of this useful catalog NOW.

SAUERMAN BROS., INC.

574 S. CLINTON ST. CHICAGO 7, ILL.

this material from the sewage plant is progressing nicely. Back in 1936, the WPA sluiced 1,800,000 cu. yds. of material of a similar nature and distributed it along the beach. Subsequent studies over a 6-year period proved definitely that sand once deposited would stay in place with little loss, provided a new groin was built at the south end of the project to counteract ocean drifts. This structure is now almost completed.

Front - End
LOADERS
For Industrial Tractors
Extensible Booms,
⅝-cu. yd., Bucket 8-foot lift,
Backfiller Blades
White Mfg. Co.
ELKHART INDIANA

Sand Formerly Wasted

Back in 1924, when the old Hyperion sewage treatment plant was originally constructed, nearly three quarter million yards of sand were wasted at a time when the beaches were eroding badly. The development of modern equipment and efficient construction schemes such as Peter Kiewit Son's Co. and Construction Aggregates Corporation use here have thus furnished two way benefits for the public money involved.

Basing the value of the beach area at $1 per square foot, according to the latest appraisal figures, the valuation of new property would be $43,560 per acre. This excavation project has already made available 100 acres of new beach property, and eventually about 15,000,000 square feet of new beach will be made available between El Segundo and Santa Monica.

Completion of excavation work sometime before January 1, 1949, will be the signal for new contracts to be let on the remainder of buildings of the new sewage plant. Besides being one of the biggest in the world, this new plant from the standpoint of metropolitan and industrial economy will be the most important in the United States when it is put into operation.

New Equipment

(Continued from page 31)

material without spill. The shallow trough also eliminates excessive belt stretch at the edges.

Arc Welding Machine

Manufacturer: Wilson Welder & Metals Company, Incorporated, 60 East 42nd Street, New York 17, New York.

Claims: The new Wilson "Hornet" 36A motor generator arc welding machine is now available.

Of compact design and available in 200, 300, and 400 ampere models, the "Hornet" 36A is a heavy-duty machine with simple control of current. The machine is designed for either 220 or 440 volts with no change in relays.

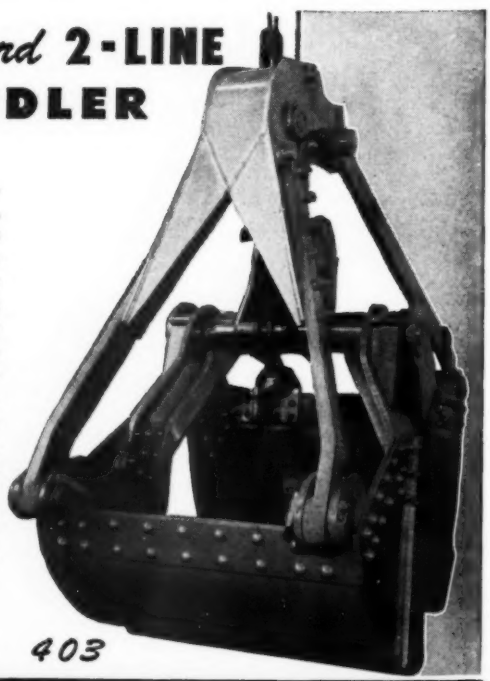
"Port-O-Reel"

Manufacturer: Industrial Electrical Works, Omaha, Nebraska.

Claims: This new cord-saver extension reel is a completely portable unit weighing less than 15 pounds without cord. It is designed to save time and cord and

ERIE *Standard* 2-LINE REHANDLER

THIS compact Lever Arm Rehandler Bucket of normal proportions has ample closing power to fill to capacity in compact materials, and is so designed that the reeving can be adjusted to obtain maximum speed with capacity grabs in loose materials. We have reduced the "height open dimension" thus requiring minimum headroom, enabling you to pile higher and to discharge into higher hoppers. Lighter weight alloy construction provides more pay load (scoop contents) less bucket dead weight. To see this bucket in all detail write for bulletin 403.



● *Write for Booklet 403*

ERIE BUCKETS • *A Complete Line*
Erie Steel Construction Co., 483 Geist Rd., Erie, Pa.
BUCKETS • AGGREMETERS • PORTABLE CONCRETE PLANTS

BUY EASTER SEALS!

to speed work on any application requiring extension cords.

The unit is said to prevent kinks and simple knots by means of a cord-guide which level-winds the cord as it is re-wound on the reel. A substantial base and the low set of the cord-guide prevents tipping, and a practical, specially-designed, ball-bearing swivel provides automatic alignment of the reel and cord with the operator as the cord is drawn from the reel.

Current for the Port-O-Reel is transmitted through a heavy, double-constant contact collector ring built into the reel. An adjustable brake and lock provides just the right amount of friction to control the rotation of the reel.

"Lo-Bin" Batcher

Manufacturer: C. S. Johnson Company, Champaign, Illinois.

Claims: Stressing low overall height for easy charging, the new "Lo-Bin" batcher is designed to serve the three standard size portable mixers with greater efficiency.

Easily charged from stockpiles or directly from an embankment, the unit has a heaped storage capacity of 30 tons, with extension panels, and measures 9½ feet high. With top panels removed, the overall height is 7½ feet and level struck capacity 8 tons.

"Airco" Welding Torch

Manufacturer: Air Reduction Sales Company, New York 17, New York.

Claims: The immediate availability of a new oxyacetylene welding torch, the "Airco" 800, has just been announced. According to the manufacturer, this new torch has a capacity for operating single flame welding tips from numbers 0 to 13 inclusive as well as multi-flame tips up to Number 15. The unit weighs 1½ pounds and is 11½ inches long.

HAYWARD BUCKETS

WON'T QUIT OR CAUSE TIME OUT

A Hayward Bucket keeps the job going ahead on scheduled time. It won't quit or cause time out.

THE HAYWARD CO.
52-54 Church Street
New York, N. Y.

MOON Generators for LIGHT and POWER
TURBO and BELT DRIVEN

The Ideal Small Power Plant

IMPORTANT MOON FEATURES

- GOVERNOR AND COMPOUND WINDING on steam-driven models prevent excess voltage output which might injure electrical equipment.
- ONLY 2 EASY-TO-REACH OILING POINTS.
- AUTOMATIC CUT-OFF on larger capacity steam-driven models prevents overload damage to generator.

MODEL 8 (STEAM)

For Lights . . . Ventilating Fans . . Other Electrical Equipment . .

SEND TODAY FOR ILLUSTRATED CIRCULARS. MODELS FROM 1 TO 7½ KW CAPACITY.

Moon Manufacturing Co.
ESTABLISHED 1893
122 N. JEFFERSON ST. . . . CHICAGO 6 . . . ILLINOIS

save time between jobs with JAHN TILT TRAILERS

Tilt—load—and you're off in a matter of minutes with a Jahn Tilt Trailer. No jacks or loading ramps required. One-man operation. Positive, automatic safety lock holds platform in position when loaded or empty. Rubber mounted drawbar absorbs road shocks and protects both truck and trailer. Ideal for transporting tractors—rollers—compressors—shovel-loaders—mixers, etc. Jahn Tilt Trailers are available in 8 ton capacity tandem axle and 5 ton capacity single axle models. Write for specifications and illustrated bulletin or see your nearest Jahn distributor.

C. R. JAHN COMPANY
Dept. 49—1106 W. 35th Street, Chicago 9, Illinois
Heavy duty Trailers from 5 to 100 tons

New trade literature

Title: **Dumpcrete Pamphlet**
Subject: The Dumpcrete Division of the Maxon Construction Company has published a pamphlet which illustrates the various uses of the Dumpcrete body in the ready-mixed concrete industry. Action photographs illustrate the pamphlet.
Where to Get: Dumpcrete Division, Maxon Construction Company, Incorporated, 131 Ludlow Street, Dayton 2, Ohio (Free).

Title: **"Going Places on Rubber"**
Subject: Off-road hauling is discussed in this recent "Caterpillar" publication. Rubber tired equipment is described operating on a range of jobs where high speeds are required on long hauls. Such operations as dam, road, airport and right-of-way construction, mine and quarry jobs, where it is necessary to carry large loads long distances, are pictorially and editorially featured.
Where to Get: Caterpillar Tractor Company, Peoria 8, Illinois. Ask for Form No. 10604 (Free).

Title: **Electrode Wall Chart**
Subject: A 25" by 35" electrode wall chart, printed in full color, has just been issued. This chart shows procedures for every type of arc welding electrode; actual results of too long or too short an arc, too much or too little welding heat, too fast or too slow a welding speed. It also shows a perfect bead as well as a cross section of all welds and complete illustrated welding symbols for both fusion and resistance welding.
Where to Get: Hobart Brothers Company, Troy, Ohio (Free).

DREDGES

HYDRAULIC DIPPER CLAMSHELL

Bolted sectional steel hulls for landlocked, inland waters

If you need a dredge, write us!

AMERICAN STEEL DREDGE CO. INC.
FORT WAYNE 1 · INDIANA · U.S.A.

DESIGNERS AND BUILDERS OF DREDGING EQUIPMENT SINCE 1905

Title: **Onan Standby Folder**
Subject: "Keep going with Onan Standby Power" is the theme of this recently published 17" x 20", 2-color broadside. The folder tells how standby electric power provides protection from electric powerline breakdowns. A table of capacities of Onan Emergency Plants is included along with a description of the Onan Automatic A. C. Line Transfer Controls which are designed to switch over the electrical load to the standby unit within seconds after mainline power fails.

One side of the folder is devoted to testimonial letters from owners of Onan Emergency Lighting Plants and the establishments they serve.
Where to Get: Publicity Department, D. W. Onan & Sons, Incorporated, 43 Royalston Avenue, Minneapolis 5, Minnesota. Ask for Form A-194 (Free).

Title: **Manhattan Rubber Catalog**
Subject: The sixth edition of "Manhattan Rubber Products for Industry," a condensed catalog of mechanical rubber goods, is now available. Many mechanical rubber products and special items manufactured by Manhattan Rubber are described in the catalog. Particular emphasis is given transmission and conveyor belting, V-belts, hose, engineered molded products, rubber roll coverings, tank linings, and abrasive wheels.
Where to Get: Raybestos-Manhattan, Incorporated, Passaic, New Jersey (Free).

Notes from the manufacturers

Lima Shovel & Crane Division, Lima-Hamilton Corporation, Lima, Ohio, announces the appointment of J. T. Conners of Cleveland, Ohio, as its agent for Northeastern Ohio.

The Connors Equipment Company's offices are at 851 Leader Building, Cleveland. Plans are under way for building a service plant in Cleveland where repair parts will be stocked. In addition to handling the LIMA line, which consists of shovels from ¾-yard to 5½ yards, cranes from 13 to 100 tons, and draglines, Mr. Conners represents the Insley Manufacturing Corporation and the Owen Bucket Company.

SKF Industries, Incorporated, Philadelphia, Pennsylvania, announces three changes in the personnel of district offices. These are the appointments of: John H. Tipton as Assistant District Manager of the Cincinnati office; M. H. Courtenay as Assistant District Manager of the Atlanta office; and E. A. Hutson as Field Engineer in the Railway Sales Department of the Chicago office.

The Truck-Trailer Manufacturers Association has elected Harrison Rogers, Vice President and General Manager of Rogers Brothers Corporation, Albion, Pennsylvania, as President of the association.

Mr. Rogers was chosen at the seventh annual TTMA convention at Edgewater Park, Mississippi. He succeeds Julius L. Glick, President of the Truck Engineering Corporation, Cleveland, Ohio.

Elections also were marked by the choice of J. C. Farrell, Easton Car & Construction Company, Easton, Pennsylvania, as "Eastern" Vice President. John C. Bennett, Utility Trailer Manufacturing Company, Los Angeles, was elected to serve again as "Western" Vice President of the association, and W. E. Grace, Hobbs Manufacturing Company, Fort Worth, Texas, was reelected as Treasurer.

The Warner & Swasey Company, Cleveland 3, Ohio, has appointed J. P. Waite, Incorporated, 3304 West Pierce Street, Milwaukee, as distributor for the Gradall, multi-purpose earthmover.

The new distributor will handle sales of the machine for Wisconsin and the upper Peninsula of Michigan.

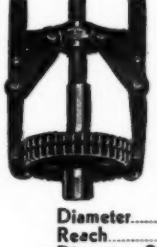
John A. Roebling's Sons Company, Trenton, New Jersey, has appointed E. George Hartmann as General Sales Manager. Mr. Hartmann has been associated with the Roebling Company since 1940.

General Tire & Rubber Company, Akron, Ohio, has appointed Admiral Wray Aubrey Fitch, U. S. N., retired, Vice-President of its subsidiary, General Tire & Rubber Export Company.

(Continued on page 64)

SURPLUS STOCK SALE!

100 Brand New Gear and Wheel Pullers



Popular Size Model No. 1004

The harder the pull, the tighter the arms hug the work. Made of heavy one-piece forged steel yoke. Heat treated forged steel arms and straps.

Will take gears, wheels, etc., up to 18" in diameter.

Diameter	18"
Reach	15½"
Diameter, Screw	1¼"
Length, Screw	16"
Hole adjustment	3 hole
Weight	40 lbs.

Bargain Price $22 ea. F.O.B South Milwaukee

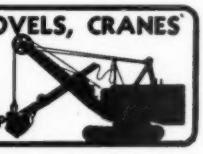
Bucyrus-Erie Co.
South Milwaukee, Wis.

TO ADVERTISE: All advertising in this section is payable in advance. Rate: 60c per line, or $7.20 per inch of 12 lines. Minimum charge $2.40. No discounts; no commissions. Please count your copy carefully to avoid delay. Each line contains 41 characters (34 characters if all capital letters are used). Count spaces as punctuation as one character each. Allow 10 characters for box number, if blind advertisement is desired. Be sure to enclose the correct amount of money with your order. Closing date—15 of preceding month. Example: January closes December 15th.

TO INQUIRE: Be sure to address your inquiry to the advertiser by using the correct box number. Mail your letter in care of Excavating Engineer, South Milwaukee, Wisconsin. Write each advertiser a separate letter. Do not write us for name and address of advertiser. This information will not be given out. We have no information about the equipment advertised other than that shown in the advertisements themselves.

LARGE SHOVELS, CRANES AND DRAGLINES

2½ YDS. AND UP



Bucyrus-Erie Model 320-B 8-cu. yd. Ward-Leonard electric combination stripping shovel and dragline. Caterpillar mounted. Available January, 1948. Located Southwestern Indiana. Box 3259

MISCELLANEOUS EQUIPT.

Complete chain crowd shovel front for Bucyrus-Erie 37-B (No. 12863). In good condition, used only two years. $2500. Box 3262

⅝ yd. Bucyrus 10-B and trailer
1-¼ yd. Northwest shovel dragline
2 yd. Northwest shovel dragline
3 yd. dragline
20 yd. Marion dragline
A. W. Nevers, Mount Pleasant, Iowa

Bucyrus-Erie drag shovel attachment for 20-B or 22-B machine. Drum lagging not included. Rebuilt and guaranteed. For price inquire:
H. O. PENN MACHINERY CO., Inc.
140th Street and East River
New York 54, New York

BUCKEYE No. 70 "Clipper" ser. No. 4233 ¾ cu. yd. combination shovel-dragline-backhoe and pile driving attachment. All buckets. Shows very little wear. $9750. Would rent.
OSGOOD No. 200 ser. No. 5028. New 1946. 35 ft. boom with ½ cu. yd. dragline bucket. A-1. $6500. Would rent. Shovel front $1500 additional. Backhoe attachment $1000 additional.
MARION No. 362, ser. No. 7473, shovel, dragline and clamshell. D-13000 Cat. engine. 1-½ cu. ft. dipper, 23 ft. boom, 18 ft. dipper. 60 ft. dragline boom. New 1941. Excellent. $23,000.
BACKHOE attachments for Bucyrus-Erie 10-B., Lorain No. 30, Unit 10-20.
SHOVEL attachment for Bucyrus-Erie 15-B. New.
BOOMS: 2 Northwest 45 ft. and 55 ft. with high gantries; 50 ft. heavy duty for Lima; 60 ft. with 18 ft. jib for Lorain; 30 ft. for P&H $150; etc.
RUDO-MATIC taglines. $150 each.
MILWAUKEE hydr. crane on 1946 Chevrolet. Used little. A-1. $4500.
GALLION 8-12 ton diesel tandem roller. Like new. $3250.
GOOD ROADS SPREADERS, rubber tired. New. $110 each.
AUSTIN-WESTERN street sweeper, model ASV-81B. Ser. No. P2010. Overhauled. Guaranteed. $1850.
CLAMSHELL and DRAGLINE BUCKETS, from ½ cu yd. to 2 cu. yd.
MURPHY ME-6 150 H.P. diesel power unit. Rebuilt $3000.
BUDA DIESEL 6 LD1742. 200 HP diesel power unit. Rebuilt. Gasoline starting engine. $3200.
NORTHERN coal conveyor, portable 36 ft., 4 cyl. Wisconsin gasoline power unit. Like new. $700.
DEMPSTER DUMPSTERS LF-200 late model with buckets. $500 per set.
FOR FWD TRUCKS: New complete transmission and transfer assembly. Parts No. 13375 and No. 21438. Original cost $1590. Our price $650.
Wenzel Machinery Rental & Sales Co.
2136 Jefferson Street Kansas City, Missouri

Dragline conversion equipment for Bucyrus-Erie 120-B shovel, 90' boom, 4 yd. bucket. Has never been used. Central location. New equipment. Box 3254

SURPLUS STOCK SALE
Dippers for Bucyrus-Erie Shovels
2—½ cu. yd. drag shovel dipper—17-B.
3—½ cu. yd. skimmer scoop dipper—17-B.
1—2 cu. yd. rock dipper 75-B.
New Dragline Buckets
2¼ yard Red Arch Type AX medium duty bucket.
5 yard Red Arch Type AY heavy duty bucket.
6 yard Red Arch Type AY heavy duty bucket.
F.O.B. Works
Write for any further information desired
BUCYRUS-ERIE COMPANY
Parts Department
South Milwaukee Wisconsin

New
DERRICKS
(ALL-STEEL, STIFF-LEG)
3 Available!
From U. S. Government Surplus. 30 Ton at 38 ft. radius; 60 ft. Boom with Bull Wheel.
Priced At a Saving!
■
FURNIVAL MACHINERY CO.
5405 Lancaster Ave., Phila. 31, Pa.
TRinity 7-5200

Railroad Bridges for Sale
3—Double track half through girder bridges, 80-foot span, now in use under unrestricted main line traffic. Can be delivered in early Spring.
1—Single track half through girder bridge, 75-foot span, suitable for branch line operation. Can be delivered at once.
For detailed information contact John F. Casey Co., P. O. Box 1888, Pittsburgh 30, Pa.

Loco. cranes—steam, 40 ton Indust. K; Misc. 10 to 25 tons; 25 ton gas.
2 yd. diesel drag., late type walkers.
Crane-drag.-hoe, ¾ and 1½ yd. Rebuilt.
Drags—2½ yd. diesel; 10-20 yd. elec.
Drag scraper equipment, 1 to 4 yds.
Trench machine, 2'x7½'; 300 bbl. bins.
Cranes-drags.—¾ and 1 yd.; Truck crane.
Compressors—315' diesel; 210' gas.
Angledozers—A-C HD-14; Int. TD-14.
Loaders—B-G 42-25; Eagle, inc. truck.
¾-yd. Rehandling clam. bucket. Bargain.
James Wood, 53 West Jackson, Chicago 4, Ill.

Bucyrus-Erie Model H74 hydraulically operated two-wheel scraper, complete with two (2) 14x20 tires, with adapter piping and control valve, struck capacity 7 yards—heaped 9 yards, suitable for use with International TD-18 or similar size tractor equipped with hydraulic blade. Good condition.
H. O. PENN MACHINERY CO., Inc.
140th Street and East River
New York 54, New York

TD-40 International tractor completely rebuilt with 4-½ yard four wheel Bucyrus-Erie scraper, complete with hoist and ropes. Excellent condition.
Kentucky Clay Mining Company
Mayfield, Kentucky

916 Cedar Rapids crusher. Like new. Steel batch boards. 3-½ yd. dump bed with wood hoist. 4" diaphragm pump complete with suction pipe. J. W. Bartels, 45 Edgar Ave., Dayton 10, Ohio.

U. S. Govt. Surplus
BRAKE LINING
Raybestos Industrial Compressed
Woven Lining in Rolls

3"x¼"	3"x5/16"	3"x⅜"
3½"x¼"	3½"x5/16"	3½"x⅜"
6"x¼"	6"x5/16"	6"x⅜"
3"x7/16"	6"x7/16"	3"x½"
3½"x7/16"	6"x½"	3½"x½"

PRICE:—Small Lots, 85% Discount
Write for prices on quantity giving sizes and amounts you can use
BRAKE LINING SUPPLY CO., INC.
32 Brighton Ave. Boston 34, Mass.
Stadium 2-1223
Other Construction Journals Apply for This Ad

ALL-STEEL DERRICKS
19—30 ton capacity BRAND NEW Wiley all steel stiffleg derricks, 32' masts, 60' booms, complete; can furnish with gasoline, electric or steam hoists.

ALSO

Air compressors, bins, boilers, cable, conveyors, cranes, crushers, engines, hammers, conc. mixers, light plants, pneumatic tools, pavers, pumps, saw rigs, welders.

EQUIPMENT CORPORATION of AMERICA

CHICAGO 12 1170 S. Washtenaw Av.	PHILADELPHIA 2 1505A Race St. Sehaff Bldg.
PITTSBURGH 30 P.O. Box 933D	NEW YORK 7 30D Church Street

(Classified continued on page 64)

For Sale

(Continued from page 63)

Modern floating washing plant, capacity 200 yards per hour. Located Northern California on paved road near railroad. Available now. For particulars address owner, William von der Hellen, Box 1026, Medford, Oregon.

New

BUCYRUS - ERIE

PARTS!

From U. S. Government Surplus

Parts For: 33B, 37B, 54B, and 120B. Gears, Pinions, Bearings, Bushings, Lining, etc.

Immediate Delivery From Available Stock . . . At a Savings While They Last!

FURNIVAL
Machinery Co.

5405 Lancaster Ave., Phila. 31, Pa.
TRinity 7-5200

One P&H 555 shovel front. New.

One P&H 600 shovel front. Completely rebuilt.

Duval Engineering & Contracting Co.
P. O. Box 1588 Jacksonville, Fla.

¾-yard dipper for Bucyrus-Erie 20-B shovel. Used very little and in excellent condition. Box 3258

Surplus Swivel Hook Double Sheave Blocks

2 10 ton "American" 14" swivel hook double sheave block, diamond pattern with cast steel sheave bushed with self lubricating bronze bushings grooved for ⅝" rope. Groove diameter 12¼" equipped with 100 lb. cheek weights. 2½" swivel hook. Approximate shipping weight 234 lbs. American Hoist & Derrick Co. Dwg. 1-M-6560.

1 10 ton "American" 14" swivel hook double sheave block, diamond pattern with cast steel sheaves bushed with self-lubricating bronze bushings. Grooved for ¾" rope. Groove diameter 10½" equipped with 100 lb. cheek weights 2½" swivel hook. Approximate shipping weight 235 lbs. American Hoist & Derrick Co. Dwg. 1-M-6560.

1 40 ton "American" 24" swivel hook double sheave block, diamond pattern with cast steel sheaves grooved for ⅞" rope. Sheaves to be bushed with plain bronze bushings, with center bored sheave pin and ¼" Alemite hydro grease fitting No. 1980 equipped with 300 lb. cheek weights and 5½" swivel hook. Total weight of block 1190 lbs. Dwg. BEFP 1-M-6560.

BUCYRUS-ERIE COMPANY
South Milwaukee, Wisconsin

PAGE DRAGLINE SCRAPER BKT. 2 yd., ex. hvy. const., complete with harness. This is ex. hvy. duty bucket, weight 7700 lbs., like new. Box 3260

Trackson Model CB9 bulldozer attachment for use with Model CT9 swing crane when mounted on TD9 International Tractractor. $450. **Tri-State College, Angola, Ind.**

MECHANICS • HOME STUDY

Step up your own skill with facts & figures of your trade. Audels Mechanics Guides contain Practical Inside Trade Information in handy form. Fully illustrated. Easy to Understand. Highly Endorsed. Check book you want for 7 days' Free Examination. Send no Money. Nothing to pay postman. ☐Carpentry $6 • ☐Auto $4 • ☐Oil Burners $1 ☐Sheet Metal $1 • ☐Welding $1 • ☐Refrigeration $4 ☐Plumbing $6 • ☐Masonry $6 • ☐Painting $2 • ☐Radio $4 ☐Electricity $4 • ☐Mathematics $2 • ☐Steam Engineers $4 ☐Machinist $4 • ☐Blueprint $2 • ☐Diesel $2 • ☐Drawing $2. If satisfied you pay only $1 a month until price is paid. **AUDEL, Publishers, 49 W. 23 St., New York 10, N. Y.**

WANTED

Wanted: 120-B Bucyrus steam dragline. Box 3263

POSITIONS WANTED

Shovel operator experienced in operating Bucyrus-Erie electric machines desires permanent employment. Age 41 years, can furnish excellent references. Box 3261

Manufacturers' Notes

(Continued from page 62)

Worthington Pump and Machinery Corporation, Harrison, New Jersey, has appointed Henry H. Ritchotte as Regional Manager in charge of sales of Worthington construction equipment and mining products in Canada.

Mr. Ritchotte was formerly Sales Manager for the Independent Pneumatic Tool Company's Contracting and Mining Tool Division. He will make his headquarters in Toronto at the offices of John Inglis Company, Limited.

Caterpillar Tractor Company, Peoria 8, Illinois, has appointed E. E. Witt as Special Representative for construction and industrial sales in its Western Division.

With headquarters in San Leandro, California, Mr. Witt will serve as a consultant to West Coast distributors of "Caterpillar" equipment on construction and earthmoving equipment and its application.

Hercules Powder Company, Wilmington, Delaware, has announced the appointment of L. C. LeBron as Assistant Manager of its Explosive Department's Contractors Division in Wilmington.

Hewitt Rubber Division, Hewitt-Robins, Incorporated, Buffalo 5, New York, announces the appointment of the Monarch Electrical Company of La-Salle, Illinois, as a distributor of the entire Hewitt line of industrial hose, conveyor and transmission belting, and packing.

The new distributor will serve all local industry within a radius of 75 miles, principally in the communities of Peru, LaSalle, Ottawa, Mendota, and Streator.

Mack Trucks, Incorporated, Empire State Building, New York City, New York, has appointed W. E. Day as Director of Research. In assuming his new duties, Mr. Day relinquishes the post of Chief Metallurgist for Mack, as well as that of General Foundry Superintendent.

Robert H. Fox, who has been sales engineer with Six Wheels, Incorporated, for the past seven years, announces the formation of the Robert H. Fox Company, with offices at 14730 Vanowen Blvd., Van Nuys, California. The company will specialize in the engineering and sales of special off-the-highway trucks, cranes, shovels, and crane carriages. It will also represent several Eastern manufacturers in the Western states.

R. G. LeTourneau, Incorporated, Peoria, Illinois, has created a wire rope sales department as a part of its Corporation Sales Division. With the advent of this new department, LeTourneau will incorporate a full line of sizes and types of preformed and non-preformed wire rope under its trade name Tournarope.

Direction of the Tournarope sales will be under the supervision of W. H. Wilson, Wire Rope Sales Manager.

Air Reduction Sales Company, New York 17, New York, has formed a new wholly owned subsidiary, the Air Reduction Pacific Company.

The new subsidiary will carry on all the business formerly conducted by Air Reduction Sales Company in the western part of the United States including the present San Francisco, Los Angeles, Portland, and Seattle sales districts. These districts which embrace all or parts of eight western states will retain their identity within the new company.

H. P. Etter, formerly Sales Manager of the Pacific Coast Division, will be President and Director of Air Reduction Pacific Company. He will make his headquarters at Room 1813, Mills Tower, 220 Bush Street, San Francisco 4, California.

The Timken Roller Bearing Company, Canton 6, Ohio, has purchased the site and taken over all construction on the new $150,000 rock bit plant at Colorado Springs, Colorado. The plant was originally scheduled to be built by the Colorado Springs Chamber of Commerce and leased to the company.

A daily output of some 10,000 rock bits a day has been scheduled for the new plant, and about 75 persons will be employed there at the start.

Dravo-Doyle Company, Neville Island, Pittsburgh, Pennsylvania, has been appointed distributor in Western Pennsylvania and Eastern Ohio for the Mead Hevitrailer, designed for handling construction equipment up to 25 tons.

A PIONEER of Small Excavating Equipment
. . . AND STILL A LEADER!

GENERAL SHOVELS, DRAGLINES, CRANES, ETC.

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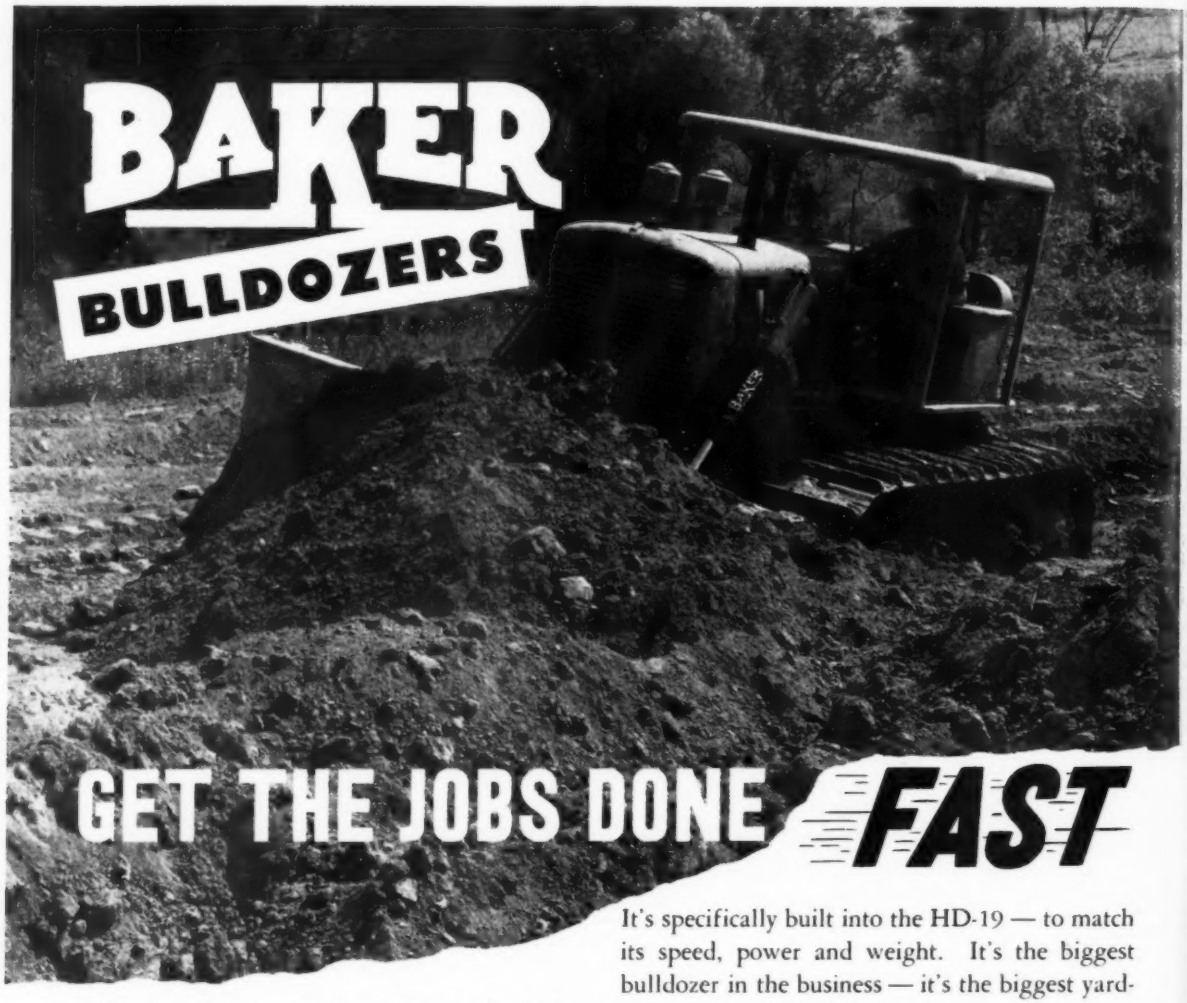

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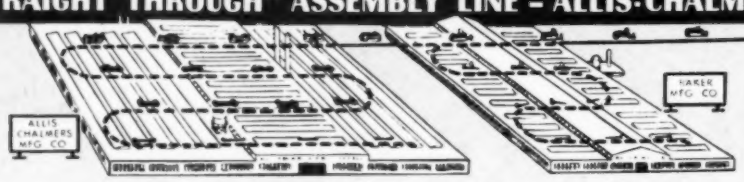

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